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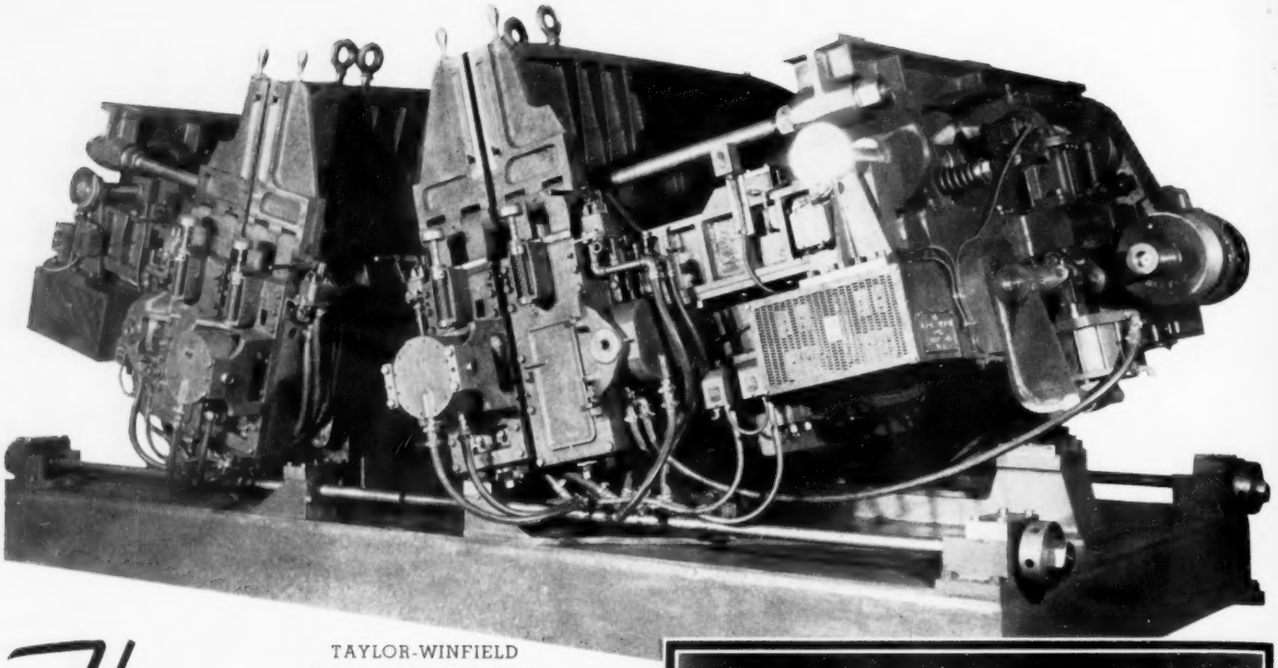

TAYLOR-WINFIELD
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ONLY ONE OPERATION. The welder is a double unit . . two separate butt flash welders are mounted on a single base. *And fully automatic*—air clamps hold the stock in place—automatic motor driven upset mechanisms control the flashing and upsetting of the weld.

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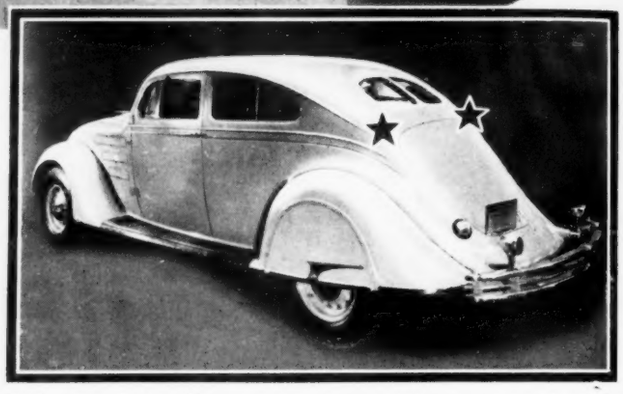

★ Two butt flash welds each approximately 100" long are made simultaneously, joining the back panel to the side panels of the Chrysler and DeSoto "Airflow" bodies.

FOR THE ENGINEERS—

Welding current is secured from four 300-KVA capacity transformers, two mounted in each welder, making a total of 1200-KVA. The unit is of fabricated steel construction. Correct welding cycle speed is obtainable through a vari-speed drive unit, and current regulators for each transformer can be adjusted to the proper welding heat. Overall dimensions are 19′ long x 13′6″ wide x 8′ high. Weight 80,000 lbs. The Unit is capable of a production of one welded body per minute.

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PRODUCERS OF ELECTRIC BUTT, SPOT AND SEAM WELDERS

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As the Editor Views the News

THAT 12 representative steel companies report an aggregate profit of $19,131,797 for second quarter, after incurring a deficit of $7,173,535 in the first period, is gratifying, but the figures do not tell the whole story. Due to code regulations and to the influence of the government's vacillating policy on price control, part of that profit was borrowed from what otherwise would have been third-quarter operations. On the other hand, the profit would have been considerably higher but for the costs of material and labor, which increased more than the prices. Also, one wonders how much earnings were impaired by expenses incurred directly in meeting the threat of strike. And, again, how much the cost of code administration affects profits.

• • •

Priority for Jobs and Wages

The industry, which was doing a remarkable job in spreading work long before the advent of NRA, established a new record in this respect in June. In that month the total number of wage earners (p. 17) was 99 per cent of that at the peak in 1929. The influence of NRA is shown in comparisons with June, 1933. In June this year as against June last year, the operating rate was up 16 per cent, employment up 35 per cent, total wages 66 per cent greater, average hourly rate 35 per cent higher and work week 9 per cent shorter.

• • •

A. F. of L. Sour on New Deal

This is striking evidence of the extent to which one industry, operating under NRA, has given jobs and wages priority over profits. Every other codified industry has done likewise, although probably in lesser degree. Under the circumstances, it would be expected that the recipients of these benefits—the employes—would be enthusiastic over NRA. But they are not. The great majority, who are not affiliated with professional unions, have more confidence in their employers than they have in NRA. The others, as represented by A. F. of L., have turned sour on NRA. The federation's latest survey of business, while admitting NRA has produced some gains, declares "there has been no corresponding increase in creation of wealth sufficient to pay the cost of these gains." The tone of the report is critical and doubtful of the present recovery program. Even professional labor is dissatisfied with the new deal!

• • •

A Shake-up Is Needed

With industry, employes and the public constantly more critical of recovery measures, President Roosevelt returns to face the need for a general shake-up in new deal policy. Unless he turns to the right—at least to the exent that he admits that opportunity for reasonable profits by business is the most potent incentive for recovery—industry certainly, and professional labor probably, will demand important changes in NRA administration. To continue longer without a clear cut, definite statement of NRA policy is to invite unnecessary dangers, not only to industry, but also to its employes, its stockholders and the public. Daily it is becoming clearer that confidence is the key to the present situation, and that the only way to stimulate it is to adopt a saner attitude toward those who invest capital.

• • •

Sell Product or Brand?

Perenially the old question of whether the popular name of a material or product should be emphasized more than brand names comes up for attention. Some observers believe the producers of stainless steel (p. 29) are missing a bet by depending too much on brand names and not properly identifying their product as "stainless." . . . An American investigator, finding 17 experimental installations of cast iron paving blocks in England and others on the continent, discusses (p. 33) the feasibility of adopting the idea in the United States . . . . An American steelmaker has perfected a combination steel and concrete bridge roadway slab (p. 38) involving I-beams and bars . . . . Poland (p. 42) is using welding on some of its taller office and commercial buildings.

E. L. Shaner

Record Comeback Puts All Steelmakers in Profit Area

IN WHAT appears to be the fastest financial comeback in the history of the industry, iron and steel producers moved into a profit area in the second quarter.

Twelve integrated producers, including all but Republic Steel Corp. of those with an annual capacity of 1,000,000 tons or more and representing 80 per cent of the capacity of the industry, reported an aggregate profit of $19,131,797 in the June quarter. The same 12 lost $7,173,535 in the first quarter and $14,653,714 in the second quarter of 1933.

For the first half year 14 integrated producers, representing 81 per cent of the country's steelmaking capacity (including two not making separate quarterly reports), piled up a net profit of $13,106,976, compared with a deficit of $47,923,335 by the same companies in the first half of 1933 and a loss of $61,159,541 in the first half of 1932.

Assuming the experience of the 12 producers in the first quarter to be typical of the entire industry, the industry's net in the second quarter approximated $23,900,000, which on the basis of a production of 9,266,196 tons in the quarter makes an average profit of $2.58 on every ton of steel produced. For the first half the average profit per ton of steel produced was exactly $1. In the first half of 1933 the loss per ton figured on the average $6.65.

STEEL CORP. EARNS $5,350,000, BEST SINCE 1931

REFLECTING the highest operations since the first quarter of 1931, the United States Steel Corp. earned $5,350,241 in the second quarter, after charges. After declaring the 50 cents a preferred share which has been the rate since February, 1933, the Corporation's surplus for the quarter was $3,548,836.

The net of $5,350,241 for the second quarter compares with a deficit of $6,989,965 in the first quarter and a loss of $8,627,367 in the second quarter of 1933.

Evidencing the progressive improvement in the Corporation's financial position, the deficit in the first half year was only $1,639,454 compared with $25,357,638 in the first half of 1933 and $33,670,722 in the first half of 1932.

In announcing this showing, Myron C. Taylor, chairman, stated that production of finished products in the June quarter averaged 48 per cent, compared with 29 per cent in the first quarter and 27½ per cent in the second quarter of 1933. Shipments slightly exceeded production.

Total payroll for the June quarter was $65,094,000, compared with $33,468,000 in the corresponding quarter of 1933. Approximately 200,000 employes were on payrolls last quarter.

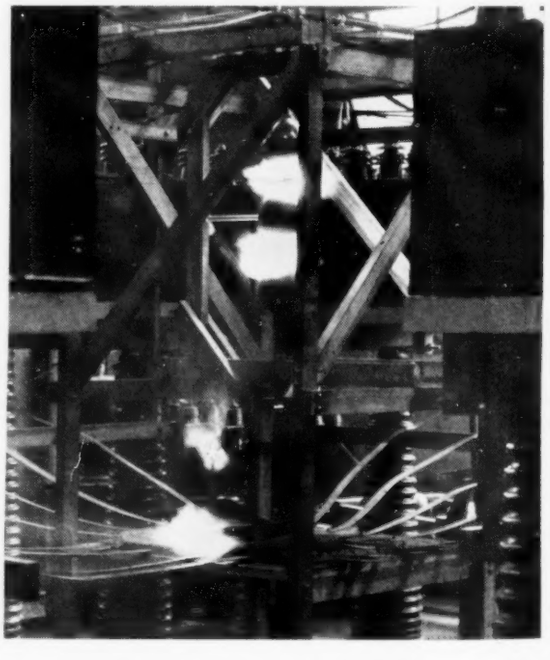
Gross working assets on June 30 totaled $441,598,007, compared with $414,969,392 on Dec. 31. Current liabilities June 30 aggregated $61,991,414, against $52,283,705 on Dec. 31.

With the declaration of the 50-cent preferred dividend payable Aug. 30 the cumulative arrearage on the preferred totals $8.75 a share. The statement of the Steel Corporation for the June quarter follows.

Earnings for the quarter resulting from operations after deducting all expenses incident thereto, including ordinary repairs and maintenance of plants, taxes and reserve for federal income taxes		$21,082,389
Charges and allowances for depletion, depreciation and obsolescence		12,468,480
Net income		$ 8,613,909
Interest charges for the quarter:		
On bonds of subsidiary companies	$1,269,266	
On United States Steel Corp. bonds outstanding	3,362	
		1,272,628
Total income from operations		$7,341,281
Deduct, Proportion of overhead expenses (of which taxes alone are $1,532,773) of the Lake Superior iron ore proprties and Great Lakes transportation service, normally included in the value of the season's production of ore carried in inventories, but which because of curtailment in tonnage of ore to be mined and shipped in 1934 is not so applied		1,991,000
Balance		$ 5,350,241
Dividend for the quarter on stock of United States Steel Corp.:		
Preferred, ½ per cent		1,801,405
Surplus for the quarter		$ 3,548,836

NATIONAL'S NET EARNINGS RISE TO $1.20 A SHARE

National Steel Corp., Pittsburgh, reports net earnings of $2,593,369 in the second quarter after depreciation, tax and interest charges, equal to approximately $1.20 a share. This compares with a net of $1,532,466 or 71 cents a share in the second quarter of 1933, and a net profit of $1,-



MAN-MADE LIGHTNING EXPLODES IRON WIRE: Closeup view in the high-voltage laboratory of the General Electric Co. at Pittsfield, Mass., showing a discharge of 200,000 amperes striking a piece of heavy iron wire, completely vaporizing it. This tremendous current is discharged at a pressure of about 150,000 volts in 0.000008-second, and is equivalent to a severe direct stroke of natural lightning. Ability to generate this current facilitates the study of ways and means for protection of equipment against lightning

642,328 in the first quarter of 1934.

At this time, National Steel reports a total working capital in excess of $33,000,000, a gain of approximately $5,500,000 since Dec. 31, 1933. Net profits for the current half year, $4,235,697, are more than double the $1,813,311 reported for the first six months of 1933.

¶Harbison-Walker Refractories Co., Pittsburgh, has declared the usual $1.50 dividend on preferred stock payable Oct. 20 to Oct. 1 record, and in addition a 25-cent dividend on the common, payable Sept. 1 to Aug. 13 record.

¶Blaw-Knox Co., Pittsburgh, reports net profit of $105,214 or 8 cents a share in the first half. This compares with net loss of $102,075 in the first six months of 1933.

Blaw-Knox has liquidated its entire German business and has quit operations in that country.

ROLLING MILL NET EQUALS 84c SHARE

American Rolling Mill Co., Middletown, O., in the second quarter made the best financial showing for any quarter since 1929, when its earnings, after charges, totaled $1,472,879, equal after dividend requirements on the 6 per cent preferred stock to 84 cents a common share.

This compares with a net of $545,269 in the first quarter and a profit of $307,268 in the second quarter of 1933. The net in the first half was $2,018,148, equal to $1.14 a common share. In the first half of 1933 the company lost $659,325.

¶Colorado Fuel & Iron Co., Denver and Pueblo, Colo., shows net profit in the second quarter of $369,419, after charges, compared with a deficit of $803,765 in the second quarter of 1933. For the first half year Colorado's earnings totaled $642,460, whereas in the first half of 1933 there was a deficit of $1,554,460.

¶Crucible Steel Co. of America, New York, reporting for the first half year discloses a net of $712,033, against a deficit of $1,024,772 in the first half of 1933.

¶A. M. Byers Co., Pittsburgh, lost $75,017 in the second quarter, after charges, compared with $183,902 in the first quarter and $265,237 in the June quarter of 1933. For the nine months ended June 30 the Byers deficit is $515,591; in the the preceding comparable period a loss of $876,494.

INLAND VOTES DIVIDEND

Inland Steel Co., Chicago, reported for the June quarter net profit of $2,129,198 after charges, which is equal to $1.77 a share and prompted declaration of a common dividend of 25 cents payable Sept. 1 to record of Aug. 15. This is the first common dividend since March 1, 1932.

This second quarter showing almost doubled the profit of $1,104,537 in the first quarter, and compares with a net of $25,760 in the second quarter of 1933. In the first half Inland's earnings totaled $3,233,734; a year ago there was a deficit of $986,293.

¶M. A. Hanna Co., Cleveland, net profit in the second quarter was $325,780, against net of $380,269 in the first quarter and a profit of $232,414 in the June quarter of 1933. The six-month showing for this year is a net of $706,050; a year ago it was $394,909.

¶Eastern Rolling Mill Co., Baltimore, reports net loss of $21,099 in the second quarter, after charges, less than one-third of the deficit of $63,611 registered in the second quarter of 1933.

WESTINGHOUSE REVERSES LOSS OF 1933

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., second quarter profit was $1,744,427, almost exactly reversing the loss of $1,776,152 in the first quarter. In the second quarter of 1933 the loss was $2,078,424.

Unfilled orders June 30 totaled $31,892,155; a year ago they were $24,705,173.

FINANCIAL STATEMENTS MOSTLY IN BLACK

McKeesport Tin Plate Co., McKeesport, Pa., earnings for the first half of 1934 were $833,407, equal to $2.78 a share, compared with net of $716,083, or $2.39 a share in the first six months of 1933.

¶Warren Foundry & Pipe Corp., Philipsburg, N. J., earned $195,811 in the first half, before federal taxes, compared with a net of $7364 a year ago when the company had no federal tax liability.

¶Cooper-Bessemer Corp., Mt. Vernon, O., lost $89,089, after all charges, in the first half, considerably bettering its position over a year ago when the deficit was $135,392.

¶National Acme Co., Cleveland, reports net profit of $92,455 for the second quarter, a slight increase over the net of $58,144 in the first quarter.

¶Fairbanks, Morse & Co., Chicago, net profit for the first half year was $22,228, against a loss of $1,026,250 in the first half of 1933.

¶S. R. Dresser Mfg. Co., Bradford, Pa., net for the first half was $29,230, against $5243 a year ago.

¶Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., reports net profit for the first six months of $72,274, after all charges and federal taxes, compared with net of $18,588 in the first half of 1933.

¶Justice John R. Knight, sitting in United States district court at Buffalo, has issued an order for the appointment of trustees in the proposed reorganization of the Wickwire Spencer Steel Co. and has set Oct. 2 for the hearing on the reorganization plan. Edward C. Bowers and Charles L. Feldman are receivers for the company, which has been receivership since 1927.

Integrated Producers Average $2.58 Per Ton in Second Quarter; $1 in Half

Asterisk Denotes a Profit: All Other Financial Statistics Represent a Deficit

	Second Quarter 1934	First Quarter 1934	Second Quarter 1933	First Half 1934	First Half 1933	First Half 1932	Annual Steel Ingot Cap. Gross Tons
United States Steel Corp.	$5,350,241*	$6,989,965	$8,627,367	$1,639,454	$25,357,638	$33,670,722	27,341,900
Bethlehem Steel Corp.	3,441,642*	902,044	3,312,846	2,539,598*	9,082,297	8,357,029	9,360,000
Jones & Laughlin Steel Corp.	886,252*	1,924,524	1,682,801	1,038,272	3,743,446	4,509,940	3,660,000
Youngstown Sheet & Tube Co.	1,012,207*	1,423,468	2,207,592	411,261	5,680,962	6,346,594	3,120,000
National Steel Corp.	2,593,629*	1,642,328*	1,532,466*	4,235,697*	1,813,311*	1,153,798*	2,232,000
American Rolling Mill Co.	1,472,879*	545,269*	307,268*	2,018,148*	659,325	961,299	2,200,000
Inland Steel Co.	2,129,197*	1,104,537*	25,760*	3,233,734*	986,293	1,440,523	2,000,000
Wheeling Steel Corp.	1,134,511*	58,333	482,143*	1,076,178*	320,276	1,509,461	1,500,000
Crucible Steel Co. of America	.....	.....	.....	712,033*	1,024,772	1,681,581	875,000
Colorado Fuel & Iron Co.	369,419*	273,041*	803,765	642,460*	1,554,460	1,194,468	840,000
Otis Steel Co.	524,725*	652,889*	257,253	1,177,614*	957,624	1,340,170	830,000
Sharon Steel Hoop Co.	.....	.....	.....	436,671*	257,426	941,900	450,000
Gulf States Steel Co.	201,616*	9,813	18,646	191,803*	112,127	359,652	400,500
Wickwire Spencer Steel Co.	15,479*	83,452	91,081	67,973	.....	.....	150,000
Totals	$19,131,797*	$7,173,535	$14,653,714	$13,106,976*	$47,923,335	$61,159,541	54,959,400

Transportation

STRUCTURAL steel fabricators at a meeting last week at Buffalo with the Central Freight association opposed any radical change in the fabrication-in-transit privilege.

So strenuous was the protest of fabricators to proposed changes in CFA territory that a committee of 16 was appointed to bring FIT freight rates up to date. Some changes will be recommended covering welding and other new fabricating processes.

Railroad traffic officials met in Chicago last week to consider possible increases in freight rates to offset higher operating costs, but adjourned for several weeks.

¶Edward G. Budd Mfg. Co., Philadelphia, has booked from the Burlington railroad an order for two more zephyr trains—high-speed, stainless steel, streamlined trains—duplicating the one built in the spring and described in STEEL for May 7, p. 30.

To manufacture these two trains and one previously on order from the Boston & Maine, the Budd company will employ 400 to 500 additional men.

New Capacity

SHARPLY modifying its ban on expenditures for plant improvements, the United States Steel Corp. has authorized important improvements in the Chicago and Youngstown districts. No announcement has been made of the financial outlay, but it is understood to be in the neighborhood of $5,000,000—approximately the same as the net profit, $5,350,241, which the Steel corporation earned in the second quarter.

At Youngstown, Carnegie Steel Co., a subsidiary, will build a 42-inch strip mill capable of rolling strip and sheets up to 36 inches wide and to No. 18 gage as noted in STEEL last week. At Gary, illinois Steel Co. will start improvements to its 28-inch mill. It also is rumored that Illinois Steel Co. will remodel plate capacity at South Chicago for strip production. Extensions to coke oven capacity in the Chicago district will be effected.

Plans are under consideration for additional plant betterment and modernization, according to a statement by Myron C. Taylor, chairman of the Steel corporation, when commenting on the report of earnings for the second quarter.

"The Corporation during the past three years has expended relatively small amounts for modernization and betterments of plants," said Mr. Taylor. "The condition of a number of the finishing plants demands that rather extensive alterations be made to secure greater efficiency in cost of production and to meet the requirements of the trade as to quality of product. Accordingly, the corporation has recently authorized betterments to plants in the Chicago and Youngstown districts calling for the expenditure of substantial amounts. Plans are also under consideration for additional work of modernization and betterments at certain other plants."

¶One of the two National Steel Corp. blast furnace stacks at Zug Island, Detroit, will be relined in the near future.

Structural Code

CONFERENCES were conducted last week between Assistant Deputy NRA Administrator Hooke and representatives of the American Institute of Steel Construction Inc., New York, in an effort to adjust the situation created when the institute rejected the emasculated code NRA prescribed for it to be effective July 22 but stayed to Aug. 7. Institute officials were reported last week to be standing firmly on their contention that supervision of erection must be transferred from the construction industry code to the fabricators code.

¶NRA Administrator Johnson and Gov. A. Harry Moore, of New Jersey, have arranged for a conference in Washington immediately on General Johnson's arrival from the West to consider the former's demand that New Jersey state codes., including that for the fabricating industry, conform in every detail to NRA codes.

Production

AS ANTICIPATED, steel production dropped 3 points last week to 26½ per cent. Buffalo was the only district to show a slight gain, while Youngstown and Detroit remained unchanged. Birmingham completely suspended operations last week and probably will not resume until after this week. Details for various districts follow:

Chicago—Declined approximately 2 points to 32 per cent last week. This decline had been anticipated a week earlier and was not due to a sudden drop in specifying, but to the fact that one producer had been building up stocks. The decline in activity on the part of this producer was partially offset by the placing in operation of more furnaces by another interest. No further change is in sight for the present week but schedules have not been definitely set as yet. Nine of 36 steelworks stacks are active, in addition to two merchant furnaces.

Central Eastern Seaboard—Off fractionally to around 22 per cent last week, although there is a possibility there might be a slight recovery this week, as one mill will resume operations, after a 2-week suspension, with one open-hearth. One eastern Pennsylvania producer last week increased its active open-hearths by one, bringing the total up to four, but offset this by shorter operating schedules on all. Finishing operations appear sustained.

Pittsburgh—Down 1 point to 19 per cent last week. For this week the rate of steelmaking operations is expected to decline 3 points to 16 per cent, due to a leading independent steel producer closing down all of its departments for ten days. Through last week, the two leading interests here operated at 25 and 23 per cent respectively, but rates of other smaller producers were less.

As of the close of last week, 17 out of 60 steel works blast furnaces were active here. These 17 included 8 of 32 for Carnegie Steel Co., 1 of 2 for American Steel & Wire Co. at Donora, Pa., and 1 of 4 for National Tube Co. at Monongahela, Pa. For the independents Bethlehem Steel Co. is operating 2 of 7 at Johnstown, Pa., Jones & Laughlin Steel Corp. 3 of 11, and Pittsburgh Steel Co. 1 of 2 at Monessen, Pa. Pittsburgh Crucible Steel Co. blew in one Midland, Pa., stack on Aug. 2, which had been down for repairs since July 10.

Youngstown—Unchanged last week at 35 per cent, with the rate expected to rise 2 points to 37 per cent this week. Carnegie Steel Co. is starting its Ohio Works bessemer plant, idle for a month.

Cleveland-Lorain—Eased 1 point last week to 32 per cent, with Otis Steel Co. operating two open hearths, Corrigan, McKinney Steel Co. three, and National Tube Co., Lorain, six.

Wheeling—Declined 2 points to 25 per cent last week, with 10 open-hearth furnaces of 39 active.

Birmingham—Steelmaking capacity last week was at a standstill, with resumption of production expected after this week.

Buffalo—Advanced 3 points to 32 per cent last week, the addition of one open hearth bringing production to the highest point reached by this district since the latter part of June. All of the 12 open hearths now in operation are scheduled to continue, with the possibility of additions by the middle of this month.

Detroit—Unchanged at 76 per cent last week, one producer having four out of eight open hearths on, and another eight out of nine active.

New England—Down to 38 per cent last week, a loss of 70 points from the previous week. Starting this week, a further decline to about 35 per cent is expected.

¶Dominion Steel & Coal Corp., Sydney, N. S., is operating at 65 per cent of capacity, employing about 2500 men five to six days a week.

partially on a recent government order for 50,000 tons of rails.

¶Pig iron production in Canada in June totaled 37,306 tons, against 38,189 tons in May. The six-month total for 1934 is 157,827 tons. On June 30 two stacks in the dominion—one at Hamilton, Ont., and one at Sidney, N. S.—were active. A stack at Sault Ste. Marie, Ont., was banked June 16.

Ferroalloys output in June was 2571 tons, or 15 tons more than in May. The first half year total for ferroalloys is 12,136 tons.

Steel ingot and direct steel casting output in Canada in June was 64,013 tons, compared with 71,437 tons in May and 31,602 tons last June. The six-month total for steel was 397,522 tons, against 130,464 tons in the first half of 1933.

Labor

EMPLOYMENT in the iron and steel industry in June was the highest in four years and 99 per cent of the peak of 1929. Actual employment was 455,966 persons, an increase of 6604 over May and 117,820 over June, 1933, according to the American Iron and Steel institute.

Of this total, 415,547 were wage earners, those on an hourly piece work or tonnage basis receiving $40,630,314, compared with $24,441,054 in June a year ago.

Indicating the manner in which the steel industry has spread work, the operating rate was only 16 per cent higher than in June, 1933, but employment increased 35 per cent, total wages 66 per cent and average hourly earnings 35 per cent. Meanwhile, the average work-week was reduced 9 per cent.

A comparison of June this year and last follows:

	June, 1934	June, 1933	% Chg.
All employes	455,966	338,146	+35
Wage earners	415,547	305,239	+36
Wages	$40,630,314	$24,441,054	+66
Hrs. per wk. per worker	35.7	39.4	−09
Av. earnings per hour...	63.9c	47.3c	+35
Operatg. rate	52.68	45.37	+16

¶As a result of having offered its good offices for a settlement of differences between the Wheeling Steel Corp., Portsmouth, O., and its employes, a conference was held Friday with the national steel labor relations board. Employers and employes were represented at the conference but up until late Friday afternoon no official statement was made by the board. The plant at Portsmouth has been closed for the past couple of months.

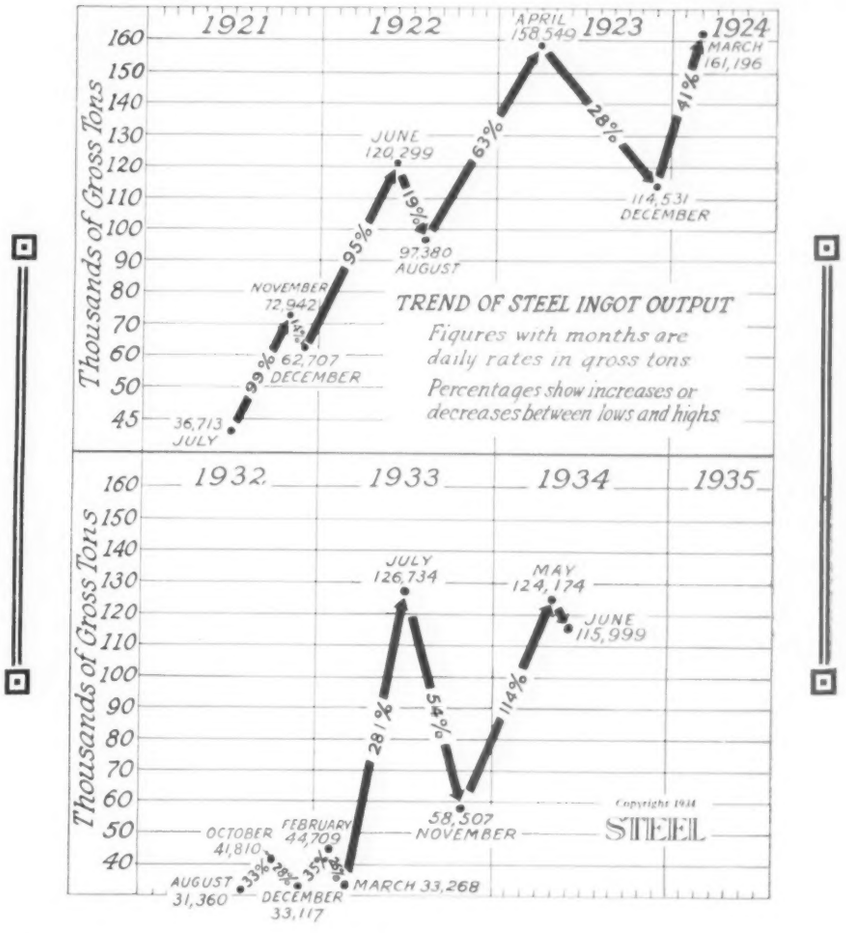
¶Last week at Pittsburgh, Louis Leonard, international secretary-treasurer of the Amalgamated Association of Iron, Steel and Tin Workers, ordered ballots printed for the union's September election. On July 30, the day before line-ups on the ballots closed, Earl J. Forbeck, McKeesport, Pa., "rank-and-file" steel leader, withdrew his candidacy for the presidency of the Amalgamated. Immediately a three-cornered fight for that office loomed.

Michael F. Tighe, of Pittsburgh, the present head who is seeking re-election, will be opposed by George J. Williams, of Canonsburg, Pa., and B. F. Bennett, of Granite City, Ill. In union circles last week, Mr. Bennett, an "independent," was not conceded even an outside chance to win and the struggle seems about to center between Messrs. Tighe and Williams. Mr. Forbeck has announced he would throw his support to Mr. Williams and "rank and filers" to a man are concentrating their strength behind Mr. Williams and a virtually complete slate of progressives.

¶Following the settlement of the controversy between the Republic Steel Corp. and the Amalgamated Association of Iron Steel and Tin Workers, about 500 men were returned last week at the Warren, O., works of Republic as 13 out of 24 hot mills there were started up. For

(Please turn to Page 22)

Recovery Pattern Parallels 11 Years Ago



CHARTED above are the rates of open-hearth and bessemer steel ingot production, on a daily basis, in the months immediately following the depression lows of 1921 and 1932. Except for a little jockeying at the close of 1932, the trends are strikingly similar. From the low of July, 1921, to the high attained in April, 1923, was 21 months; it was also 21 months from the low of August, 1932, to May, 1934. The high of April, 1923, represented a gain of 331 per cent over the low of July, 1921; the daily rate in May, 1934, was 296 per cent higher than the low of August, 1932. In the periods charted, each successive low was higher than the previous low; the same could be said of each successive high had May of this year topped last July, but on the basis of elapsed time—21 months from the depression low—the recession in June was not unexpected. There was no fall recovery in 1923; the question is, will there be one this year? A majority of prophets count on one, for one thing because of government expenditures. In the 16 years beginning with 1918, it has been an even break for fall rises.

July Pig Iron Output Drops Sharply; 18 Stacks Out

COKE pig iron production in the United States dropped sharply in July and struck a level which was only a trifle higher than the output of last January, the lowest point of 1934. During the month, 18 more blast furnaces were blown out or banked, thus bringing the total of active units on the last day of the month down to 74. With the 25 stacks taken out of production in June, a total of 43 have been made inactive in the two-month period.

Reflecting this loss of productive capacity, average daily production of iron in July fell to 39,630 gross tons, a loss of 24,933 tons, or 38.7 per cent from the 64,563 tons of June. This was the lowest average daily production since last January when the rate was 39,537 tons. The rate in July, one year ago, was 58,108 tons per day.

MONTHLY IRON PRODUCTION

	1934	1933	1932
Jan.	1,225,643	568,785	971,437
Feb.	1,270,792	553,067	960,550
Mar.	1,625,588	542,013	967,015
Apr.	1,736,217	623,606	855,734
May	2,057,471	892,326	783,769
June	1,936,897	1,264,953	626,015
July	1,228,544	1,801,345	570,222
7 mo.	11,081,152	6,246,095	5,734,742
Aug.		1,833,265	528,105
Sept.		1,507,931	953,640
Oct.		1,358,540	644,648
Nov.		1,083,740	625,753
Dec.		1,192,136	547,179
Total		13,221,707	8,674,067

July was the second consecutive month to show a loss, the June output having dropped 1807 tons per day from the 66,370 tons of May, the peak month of the current year.

Total production for July was 1,228,544 gross tons, this being a loss of 708,353 tons, or 36.6 per cent from the 1,936,897 tons of June. This drop was made in spite of the fact that July was a one-day longer month than June. The July total was the lowest since January with 1,225,643 tons, and compared with 1,801,345 tons produced in July, 1933.

Production for the first seven months of 1934 aggregated 11,081,152 tons, an increase of 4,835,057 tons, or 77.2 per cent over the 6,246,095 tons in the first seven months of 1933. In 1932, the output for seven months was only 5,734,742 tons.

Relating production to capacity, the operating rate for July was 28.4 per cent, as compared with 46.3 per cent in June and 47.5 per cent in May. In July, one year ago, the rate was 42.4 per cent. Operating rates for the current year have been revised slightly downward on the basis of the new capacity figure of 50,975,561 gross tons of coke pig iron and ferroalloys as of Dec. 31, 1933, as announced by the American Iron and Steel institute (STEEL, July 9, page 11.)

AVERAGE DAILY PRODUCTION

	1934	1933	1932	1931
Jan.	39,537	18,348	31,336	55,337
Feb.	45,385	19,752	33,122	61,114
Mar.	52,438	17,484	31,194	65,448
Apr.	57,873	20,786	28,524	66,986
May	66,370	28,784	25,282	64,355
June	64,563	42,165	20,867	54,599
July	39,630	58,108	18,394	47,170
Aug.		59,137	17,035	41,264
Sept.		50,264	19,788	38,947
Oct.		43,824	20,795	37,831
Nov.		36,124	20,858	36,727
Dec.		38,456	17,650	31,625
Av.	52,269	36,223	23,699	50,035

The 74 blast furnaces making iron on July 31 was the smallest number in blast since last December with an equal number of active stacks. Beginning with December, operating stacks increased to 86 in January, 90 in February, 97 in March, 109 in April, and reached a peak of 117 in May. The drop then was to 92 in June and 74 in July. This is in sharp contrast with July, one year ago, when 105 furnaces were blowing.

During the month, 23 furnaces were blown out or banked and 5 were blown in, making the net loss 18. Of the nonmerchant or steelworks class, 20 were blown out and 5 were blown in; of the merchant class, 3 were blown out and none blown in.

JULY IRON PRODUCTION

	No. in blast last day of month July	June	Total tonnage Merchant	Nonmerchant
Ohio	17	24	75,921	217,768
Penna.	23	24	36,106*	288,649*
Alabama	7	10	47,617	56,801
Illinois	5	6	37,495	58,802
New York	5	7	56,193	22,813
Colorado	1	1		
Indiana	6	6	51	203,497
Maryland	2	3		
Virginia	0	0		
Kentucky	2	2		
Mass.	0	0		
Tennessee	0	1		
Utah	1	1	439*	126,392
West Va.	1	3		
Michigan	4	4		
Minnesota	0	0		
Missouri	0	0		
Total	74	92	253,822*	974,722*

*Includes ferro and spiegeleisen.

Furnaces blown out or banked in July were: In Ohio: Ohio Nos. 2 and 4, Carnegie Steel Co.; Cleveland No. 1, Otis Steel Co.; two River, Corrigan, McKinney Steel Co.; Lorain No. 1, National Tube Co.; Massillon, Republic Steel Corp.; Portsmouth and Steubenville No. 1, Wheeling Steel Corp. In Pennsylvania: Shenango Furnace Co.; Steelton B, Bethlehem Steel Co.; Edgar Thomson H, Carnegie Steel Co.; Midland No. 3, Pittsburgh Crucible Steel Co.; In New York: Lackawanna F, Bethlehem Steel Co.; Donner No. 1, Republic Steel Corp. In Maryland: Maryland A, Bethlehem Steel Co. In Tennessee: Rockdale, Tennessee Products Corp. In West Virginia: Weirton No. 2, National Steel Corp.; Riverside, Wheeling Steel Corp. In Alabama: Ensley Nos. 3, 5 and 6, Tennessee Coal, Iron & Railroad Co. In Illinois: South Works Old No. 1, Illinois Steel Co.

RATE OF OPERATIONS

(Relation of Production to Capacity)

	1934[1]	1933[2]	1932[3]	1931[4]
Jan.	28.3	13.3	22.1	38.4
Feb.	32.5	14.3	23.4	42.5
Mar.	37.5	12.7	22.0	45.4
Apr.	41.4	15.1	20.2	46.5
May	47.5	20.9	17.9	44.7
June	46.3	30.6	14.7	37.9
July	28.4	42.4	13.0	32.7
Aug.		42.8	12.0	28.7
Sept.		36.4	14.0	27.0
Oct.		31.8	14.7	26.3
Nov.		26.2	14.7	25.5
Dec.		27.9	12.5	22.0

[1]Based on capacity of 50,975,561 gross tons, Dec. 31, 1933; [2]on capacity of 50,313,975 tons, Dec. 31, 1932; [3]on capacity of 51,598,175 tons; [4]on capacity of 52,515,875 tons. Capacities by American Iron and Steel institute.

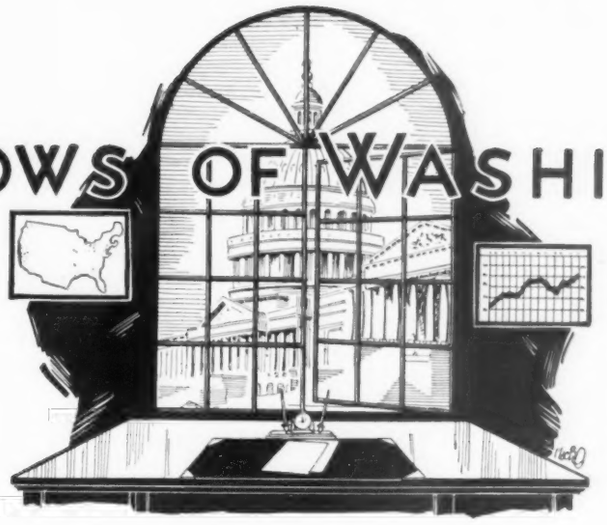
Furnaces blown in during the month were: In Ohio: Mingo No. 2, Carnegie Steel Co.; Lorain No. 5, National Tube Co. In Pennsylvania, Duquesne Nos. 3 and 4, Carnegie Steel Co.; Monongahela No. 1, National Tube Co.

Virginia Iron, Coal & Coke Co. has dismantled its Max Meadows blast furnace at Max Meadows, Va. This furnace had an annual capacity of 60,000 tons. With its demolition, the total number of potential blast furnaces in the United States is reduced from 283 to 282.

Treadwell Low on Locks

Treadwell Construction Co., Midland, Pa., wil require approximately 10 tons of structural steel and one ton of cast steel for repair parts to locks 11 and 18 in the Ohio river, on which it submitted low bid last week of $1227.

WINDOWS OF WASHINGTON



WASHINGTON

ONE infallible distinction between the great and near-great in Washington these days is that the former have satellites who scan the more important newspapers and magazines and either mark or clip articles of special interest.

During the past two weeks these vicarious readers have had a field day with second-quarter financial statements. United States Steel earns $5,350,000, Bethlehem Steel declares a preferred dividend, du Pont nets $1.86 a share—such is the morning reading they have put before the great.

Could these reports have been suppressed, it would have been better for industry. Any financial improvement is seized upon here as so much evidence that NRA has lifted industry out of the mire, that recovery has been accomplished and the time is ripe for getting the reform phase of the new deal under way.

Incidentally, the good showing of industry in the past quarter is going to be used extensively on the stump this fall in support of the administration. Five million is small change for public works or relief, but as a corporate earning it sounds immense.

Third quarter reports, of course, will not make such good reinforcement for the new deal, but they will not be out until a week or ten days before election, and can be explained away as caused by the usual summer slump in business.

Granting that the country would survive, it has been only a matter of time before the administration got around to social reform. In his inaugural address the President put it second only to recovery. Before sailing for Hawaii last month, he appointed a council to frame a legislative program for the session of congress convening in January.

Even in the repose of his steamer chair on the cruiser Houston last week the President was thinking of it, for he radioed Washington to undertake the preliminaries for a conference this fall on the decentralization of industry.

THIS matter of social reform hinges on the word security—security, of course, for "the little fellow," with industry or capital footing the bill. It is another device for transferring assets from the Haves to the Have-Nots.

The vision which entrances the President—and he can paint the picture in an inimitable and convincing manner—is something like this:

> Industry to be largely removed from the great cities to the countryside, where labor can have its gardens and be partially self-sustained by the land. This is also a favorite theme of Henry Ford. Motor trucks and widespread distribution of electric power are seen undermining the advantage of the city.
>
> Labor and capital to set aside sufficient funds to insure some income during periods of unemployment; also, to create reserves for meeting the tragedy of disability and to provide a retirement or old-age pension.
>
> Federal authorities to make available advice on vocational guidance, to study technological unemployment, to make shifts in the supply of labor, to level off the peaks and fill in the valleys in the employment cycle, to create labor reserves for new industries, to make tide-over loans, to remove every vestige of insecurity from labor.

There can be no doubt down whose alley this program lies. If General Johnson was the President's prophet for recovery, Secretary of Labor Perkins is the prophet of reform. In the President's absence, it is Miss Perkins who is shaping up the preliminary work.

Fortuitously happening to be in San Francisco at the time of the recent general strike, General Johnson regained the limelight, but just as surely as reform is succeeding recovery as the administration's objective, so Miss Perkins is elbowing General Johnson off the stage.

IT SEEMS safe to predict that steel and other industries will deal more with Miss Perkins during the coming year, and especially at the next session of congress, than with any other federal official. Second only to her will be Senator Wagner, of New York, who will be the administration's mouthpiece in congress in furthering this legislation.

Over the past year Miss Perkins has found it hard to be patient with industry, like steel. Just on general principles, any industry that will not recognize any union and that will not arbitrate any demand by labor is archaic. Her attitude is that industry is rather to be pitied than to be censured.

In virtually so many words she has maintained that the cost of unemployment—that is, the expense of making unemployment payments to labor—should be made so stiff that industry will go to almost any lengths to avoid idleness.

In principle Miss Perkins early this year approved the Wagner bill requiring the payment of 5 per cent of payrolls into an unemployment insurance fund. This bill was a trial balloon and was not expected to be passed on its initial presentation, but it probably will be the first item on the agenda for social reform next January.

It is possible, too, that the principles enunciated for pensioning railroad labor will be applied to steel and other industries. These are predicated upon a 2 per cent payroll deduction by labor and a 4 per cent contribution by the employers, all to

be paid into a central fund in Washington.

There is a juicy morsel that is not being overlooked. The first year it is expected that the railroad pension treasury will total slightly over $100,000,000, all to be handled by a new government agency and invested in government bonds.

When the steel industry, the packers, cement manufacturers—in fact all industry—begin paying unemployment and old-age and other funds to Washington—well, that is a politician's dream of paradise.

Discussing this social program last week, Miss Perkins described it as the "American way." Instead of putting a pillow under a man after he has been knocked down, the new deal will attempt to avert the accident, she explains.

Like the President, Miss Perkins' acquaintance with the iron and steel industry is fragmentary. To the President, rails typify the industry. To Miss Perkins, the steel industry includes principally the manufacture of automobile "plates" (a neophyte's error for sheets) and barbed wire, but also machine tools and almost everything fabricated from steel.

SECURITY, a word that will be heard quite frequently from now on, means all things to all people. The favorite interpretation of Washington is that it will take all fear of unemployment and want off the back of labor.

Plans of the administration necessarily are vague at this time, but it is no exaggeration to visualize the steel industry, for example, given a definite quota of labor and expected to maintain it. For purposes of expanding employment under NRA, the quota of the steel industry was the 460,000 persons required in 1929.

Barring some technological development of vast importance, the steel industry would be expected to provide jobs for its entire quota or to assist substantially in supporting those in enforced idleness. As old age crept up on steel labor, the industry would be expected to pension it, presumably contributing $2 to every $1 put up by labor, as in the case of the railroads.

In a degree, this would involve the regimentation of labor to an extent comparable to the regimentation of industry under NRA. Presumably labor would not willingly sever its connection with so certain a source of income, whether employed or idle, and would want to build up a basis for a retirement pension.

As for meeting the additional costs of so highly socialized a condition, steel like other industry presumably would be ground between the millstones. Washington's viewpoint on earnings is cost, plus a thin veneer of profit, plus whatever is required to defray the cost of so-called security. Recent pressure on prices by consumers has met a sympathetic response in Washington despite the higher costs imposed by conformance with NRA codes.

That the Rockefeller interests are alive to the cost is indicated by a recent report by Industrial Relations Counsellors Inc., an organization subsidized by the Rockefellers. This group last week termed unemployment insurance "the most costly social experiment the nation has yet undertaken."

There are some who are cynical enough to speculate on the productivity of labor in a complete state of security. These pessimists maintain that the only thing that keeps 99 per cent of the world at work is the fear of want, and that to remove it would promote inefficiency to an extent that would undermine industry.

These persons cite as a parallel the effect on industry if it were assured a 6 per cent return, regardless. The incentive to improve technique would disappear, and a condition of complete stagnation obtain. The speculative element of industry would go.

Ask any horny-handed official of the American Federation of Labor what he thinks of these plans for Utopia, and if you can be trusted with a confidence you will receive a highly inflammable answer.

Not all the strings Miss Perkins is pulling are in congress. She is deftly co-ordinating state action in regard to unemployment and old-age insurance, riding both the federal and state horses at the same time. Chances are that the first step toward unemployment insurance will be taken at the coming session of congress, assuming Democratic control continues.

AT PRESENT the federation of labor has something more practical on its hands than special legislation. It is the inroads that communists have made as evidenced by their ability to convert the longshoremen's strike at San Francisco into a general strike.

Organized labor has always maintained that given 5 per cent of the men in any plant—provided they are the "right" men—it can control that plant. The communists have accepted this as gospel, and given the "right" men in any union, even though only 5 per cent of the total, they believe they can win control.

At the national communistic convention in Cleveland last April the party directed its adherents to join federation unions and to bore from within. The alarm of officials of the federation is genuine. William Green, president of the federation, spoke from the heart when he deplored the communistic aspect of the San Francisco situation a few weeks ago.

In some of the larger cities representatives of the local federations have gone to newspapers and asked to be set right in the eyes of the public in regard to strikes called without a genuine basis by a few radicals inflaming more lethargic members.

Curiously enough, communists are more bitter toward labor leaders like Mr. Green and social leaders like Miss Perkins than any out-and-out capitalists. They feel that any step in leadership of labor that does not go the whole way is a betrayal of trust. Any steel president could become a member of the communist party quicker than Mr. Green or Miss Perkins.

Communists have tried to place on Miss Perkins blame for vigilante raids on their headquarters in San Francisco during the general strike. They also are enraged because Mr. Green has been insistent that communists be deported. The federation of labor, it will be recalled, fought against recognition of Russia, and failure of any worth-while trade to develop between the two nations is regarded as backing up labor in this country.

IF EXPECTED trouble moves on schedule, this may be the most hectic week in the experience of NRA. The lid probably will be blown off the industrial advisory board, and the matter of intrastate jurisdiction likely will come to a head.

When NRA was created a year ago June, advisory boards for industry and for labor were set up. For understandable reasons these groups always have been antagonistic, but General Johnson has stood between them and held the balance.

It will be recalled that before General Johnson left for his western vacation he removed the Blue Eagle from the Harriman mills at Harriman, Tenn. In his absence, Division Administrator Glancy, a former General Motors executive, undertook to adjust the matter. He finally succeeded, after waiving some of the early stipulations.

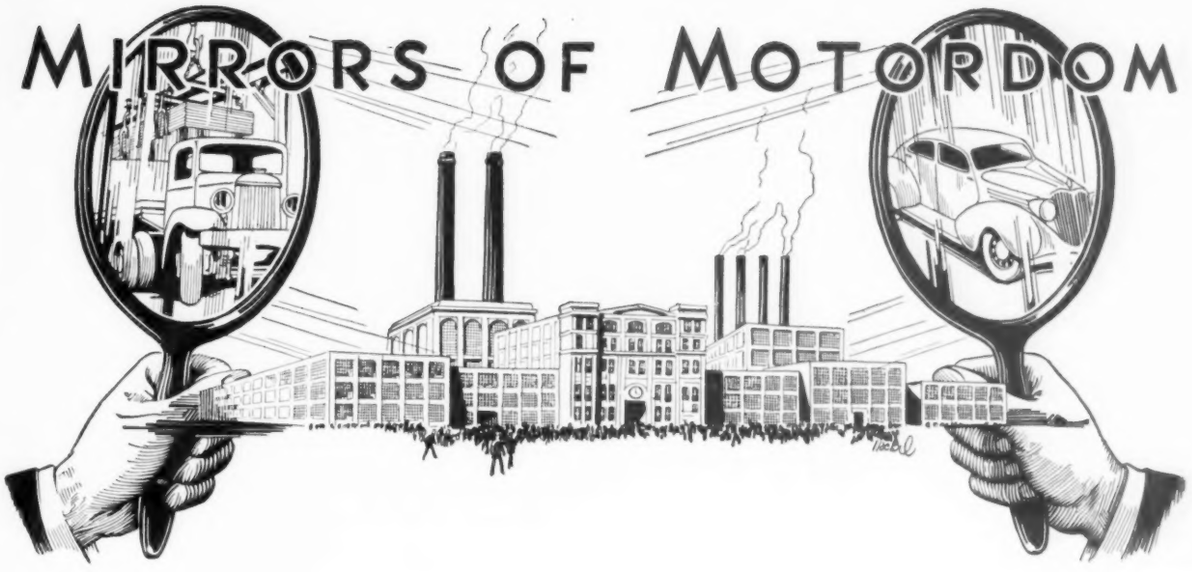
The settlement was regarded as a

(*Please turn to Page 22*)

Technocracy Under Hammer

TECHNOCRACY went over the hill to the poorhouse last week when headquarters of Howard Scott, chief technocrat, at Pompton Lakes, N. J., were sold at auction to satisfy a judgment. These assets were principally the property of the Duron Chemical Products Corp., Mr. Scott's floor polishing company. A collection of dusty books, principally technical, brought 50 cents. A 1926 automobile went for $34 and two others for $5 each. Including bids for factory equipment, a total of $133 was realized.

MIRRORS OF MOTORDOM



DETROIT

RETAIL sales of automobiles are slipping in the industrial areas of the East and North, reflecting not only actual although slight decline in employment but also denoting increasing uneasiness over the future in the minds of workers. The latter symptom is more significant than the former, because the bulk of 1934 sales has been made to this class on the confidence of their ability to meet installments.

In California there has been a mild rebound in sales following settlement of the strike. By the middle of May, the South appears to have purchased most of the cars it will absorb this year, and sales there have shown a greater falling off than any section except the western drought areas. As between the three price classes of cars, demand for the medium-price jobs has declined the most, while that for high-price models has been surprisingly-well sustained.

Whether the present production situation in automobiles is strong or weak depends upon the viewpoint. Not even the most optimistic visualized, in the early summer, that early August assemblies would be almost 60,000 weekly.

First Recession from 1933 Level

On the other hand, August will be the first month of 1934 that will not produce as many cars as the comparable month of 1933. An estimate of 255,000 cars and trucks in July compares wtih 229,357 last July. In August last year 232,855 units were made, with the present month set down for slightly over 200,000.

How strong the comeback has been this year is indicated by production statistics for the seven months ended July 31. In that period assemblies totaled 1,969,000, with July estimated. In the same period of 1933 the total was only 1,219,000. In 1932 it was 980,000—which was the bottom. In 1931 the 7-month output was 1,792,000 units, in 1930 it was 2,465,000, and in record 1929, 3,727,000.

Since the July 4 holiday production has eased by almost imperceptible degrees. In the first week following the holiday—that ended July 14—assemblies totaled 66,000. In the week ended July 21 they were off fractionally to 65,800; in the week ended July 28 they slipped to 59,400; and in the week ended last Saturday—Aug. 4—to 58,500. This week another moderate decline is forecast.

Due principally to the unusual strength in the market for trucks, Chevrolet assemblies last week went up an even 1000 to 20,000 units. Compared with an actual production of slightly over 90,000 in July, the tentative schedule for August was about 75,000, but indications the past few days are that the month's final showing will be in excess of this figure, due again largely to trucks.

Ford production last week held steady at just above 18,000 units. Because most Ford purchases of materials recently appear to be aimed at rounding out banks of parts and cleaning up inventories, Detroit is again filled with rumors of changes. Most of these convey the intimation of a slightly longer job with some change in springs, the motor to be mounted well over the front axle and the rear seat located well ahead of the rear axle. The small Ford is still regarded as out of the picture, although any speculation on Ford policy is subject to a sudden decision by Mr. Ford. The 22,000,000th Ford rolled off the assembly line July 18.

Plymouth is easing gradually, the night shift having been taken off, but the day assembly lines holding at five days a week. In the week ended last Saturday the Plymouth total was 6000, compared with 7000 the week preceding.

Automobile Production

Passenger Cars and Trucks—U. S. only
By Department of Commerce

	1932	1933	1934
January	119,344	130,087	156,907
February	117,418	106,888	231,707
March	118,959	118,002	331,263
April	148,326	180,713	354,745
May	184,295	218,347	331,641
June	183,106	253,387	308,051
July	109,143	229,357	*255,000

*Estimated.

Estimated by *Crum's Reports*

Week Ended	
Aug. 4	58,554

Buick Sees Exports Quadrupled

Buick last week assembled 1600 units, a decrease of about 400 from the week ended July 28. Buick's July total at 9648 units was just short of the 10,756 in June, but more than double the 4348 of July, 1933. Buick has scheduled 7300 units for August, compared with 4900 a year ago. Buick looks for its export business this year to be 9000 units, almost four times that of last year and nearly equal to 1930.

Oldsmobile was one of the few makers to increase last week, expanding 125 units to a total of 2625. This, however, was a reduction from the third week of July and probably was a temporary rebound. Compared with a July output of about 11,000, the tentative schedule for August is 8000.

Pontiac also had a slight rebound last week, going from 1300 units to

1700. Tentatively it has scheduled 6000 for August, paralleling July production, but chances are this will be reduced.

Terraplane-Hudson holds at around 950 cars weekly. Studebaker is unchanged at 1500, Nash at 900, DeSoto at 125 and Chrysler at 300 to 400.

Cadillac-LaSalle continued closed last week for inventory and no shipments were made to dealers from factory stocks. Packard has been moving its dealer stocks a little more rapidly and has been maintaining production at about 15 cars a day, five days a week. Pierce-Arrow also is shipping more from stock, reflecting the aggressive attitude of its dealers in reducing their stocks. Lincoln production has been averaging about 35 units a week.

Austin has received permission from the federal court at Pittsburgh to manufacture 1000 cars. . . . Federal will announce new ½ and 1½-ton trucks shortly. . . . Efforts to unscramble White from its merger with Studebaker continue and some direct results are expected shortly.

Windows of Washington

(*Concluded from Page 20*)

victory for the industrialists in NRA. Organized labor at Harriman rebelled against the settlement. So did labor forces in NRA headquarters in Washington, as led by Division Administrator Berry, himself head of the pressmen's union.

Accordingly, the telegraph wires to wherever General Johnson was in the West were kept hot. The labor group prevailed on the general, and he ordered the Blue Eagle removed from Harriman a second time.

Then the industrial group got busy. It wired its side to the general, and persuaded him to rescind his order that the Blue Eagle be removed from Harriman a second time. For one thing, it was pointed out that there might be legal complications developing.

So the Blue Eagle flies over the Harriman mills and the labor group in NRA is smouldering, but there is a feeling that General Johnson thinks the labor group is nearer right than the industrialists. At any rate, a shakeup in the industrial advisory board is on the way.

Heretofore, this advisory board has consisted of 13 members, selected from Secretary of Commerce Roper's business advisory and planning council. Now it is proposed to have five resident members, full time and on salary, and 16 nonresident members who will attend occasional meetings.

William Witherow, whose name is associated with a die-rolling process taken over by the Republic Steel Corp. and who now is head of the Steel Products Corp., Pittsburgh, appears to be the first of the resident members. Others may be named early this week.

Intrastate jurisdiction reaches the crucial stage in the application of the Holmes Foundry Co., Port Huron, Mich., for exemption from the gray iron foundry code on the ground its business is entirely intrastate. A hearing is scheduled for Tuesday. In event the Holmes foundry wins, there may be scores of businesses which, by dropping a few out-of-the-state customers, can qualify as strictly intrastates ones.

In New York, the service trades have threatened a one-day strike to force imposition of an intrastate code and adjust some tension in competition. There has been trouble in Chicago because of the intrastate feature in the tire-selling business. The Scranton & Lackawanna Coal Co., in eastern Pennsylvania, has challenged the right of NRA to fix intrastate prices.

Coal also is a sore spot in Cleveland, some dealers contending that NRA-fixed prices are too high. In Baltimore, the L. Greif & Sons Co. has restrained NRA from forcing it to pay higher than code minimum wages for some classifications. Small hand-made cigar manufacturers near York, Pa., find code minimum wages devised more for machine-cigar making interests, and have rebelled.

The American Institute of Steel Construction Inc. has supplied the outstanding contest for iron and steel by refusing to accept a code putting erection in the hands of buyers, which would make erection a closed union shop matter. Conferences were held in Washington last week and Deputy Administrator Hooke expressed the expectation that an adjustment would be reached this week.

In the various court actions in which it is involved NRA appears to be trying for just enough favorable decisions to establish its supremacy. Regardless of the disuse into which the Blue Eagle has fallen, the recovery act is the law of the land until June 16, 1935, and no matter how unpopular code regulations may be, a jurist who is also a purist has no alternative.

Labor

(*Concluded from Page 17*)

the present, the works at Niles, O., and at Moline, Ill., which were closed when Republic announced it would not renew its contract with the Amalgamated, will not be reopened.

Details of the settlement have not been announced either by Republic or the Amalgamated in accordance with an agreement reached with the national steel labor board.

¶Five union leaders last week were cleared of charges that they had intimidated Weirton Steel Co. witnesses several months ago during the legal proceedings Weirton Steel had with the national labor board.

On July 12 Weirton Steel's superintendent at Clarksburg W. Va.—E. E. Paddack—took the step as an individual of charging five officers of Blue Eagle lodge No. 32 of the Amalgamated association with obstructing justice and intimidating witnesses employed in the Clarksburgh plant.

Last week at Clarksburg Magistrate Fred E. Shetter dismissed the allegations after a hearing. The complaint of Mr. Paddack had charged that the union officers had compiled a list of Weirton employes who had signed affidavits in its behalf which affidavits were to have been presented in the labor board case. These signers were then branded as "unfair to union labor."

MEETS WITH AMALGAMATED

Last week L. H. Burnett, vice president of the Carnegie Steel Co., attended meetings of mill superintendents of the Carnegie company's McDonald Works at Youngstown, O., and Duquesne Works at Duquesne, Pa., with representatives of Amalgamated lodges at those plants. No formal statement was issued following the meeting but this was the first time, at least in many years, that the Carnegie company has held any kind of parley with the Amalgamated.

¶Code authority for the reinforcing materials fabricating industry, Chicago, places the average hours per week of all employes at 33.3 in May, compared with 29.9 in April. The average wage per hour was 71.6c in May and 71.2c in April. The hourly wage in this industry is now approximately what it was in 1926 and 1929, and shows an increase of 32.4 per cent over the first half of 1933.

¶Sixth district of the Amalgamated association, meeting recently at Newton Falls, O., to consider a wage scale for submission to Amalgamated officials at Pittsburgh, blazed a new trail in creating a committee on public affairs, calculated to supply the public with a true picture of the union side and to combat inferences that labor resorts to violence.

¶Carnegie Steel Co. is posting at its various plants large bulletins patriotically done in red, white and blue, portraying representatives elected in June for collective bargaining under the employe representation plan.

¶American Federation of Labor of-

ficial statement on unemployment places the total in June at 10,312,000. This compares with 10,248,000 in May and marks the end of an unbroken decline beginning in February. The peak of uemployment, according to the federation, was 13,689,000 in March, 1933.

¶The National Industrial Conference board report on unemployment also registers an increase over May, but places the June total at only 7,934,000. Compared with the situation in March, 1933, unemployment in June was 60.5 per cent lower in the manufacturing and mechanical industries, 14.3 per cent lower in transportation, 54.2 per cent lower in trade, 28.5 per cent lower in domestic and personal service and 20 per cent lower in the extraction of metals.

NRA

CODE for iron ore industry, dividing the country into two regions —one comprising Minnesota, Michigan and Wisconsin, and the other the remainder of the country—will be heard in Washington, Aug. 6, by Walter A. Janssen, deputy administrator.

This code is a revision of the one originally submitted by the Lake Superior mining interests, but referred back to them to embrace the entire country. Minimum hourly rates proposed are 40 cents in the upper lake region and in the West, 35 cents in the East, 27 in Jefferson county, Alabama, and 25 cents in the rest of the South.

CODES APPROVED

For the wholesale hardware trade, supplemental to the general wholesaling or distributing code, effective Aug. 9. Ballots for the nomination of candidates and alternates on the divisional code authority will be issued to members of the trade this week by the National Wholesale Hardware association, Philadelphia.

For the sheet metal distributing trade, also supplemental to the general wholesaling and distributing code, effective Aug. 6. A last minute clause forbids sales below the seller's net invoice cost, plus transportation charges to the seller's warehouse.

CODE BUDGETS PROPOSED

For metal tank industry, $40,400; for metal window industry, $32,000 plus $5475 for the Pacific coast committee; for the fabricated metal products manufacturing and metal finishing and metal coating industry, $1 per employe per year, or $355,444.

¶Executive committee of the Institute of Scrap Iron and Steel met in Pittsburgh Thursday and Friday with John Connolly, code administrator, to adjust cost problems.

Here and There in Industry

CITY MACHINE & TOOL WORKS, Dayton, O., designer and manufacturer of gear chamfering and burnishing machines, precision boring machines and spindles, special machinery, tools and jigs, has reincorporated under the name of the Cimatool Co. This makes the trade name, Cimatool, coined several years ago and applied to its products, a part of the company's title. No change has been made in policy or executive personnel except for the addition of shop executives recognized as specialists in large body die practice. Plant improvement and general reorganization of shop equipment and other added facilities will permit a wider range of activities and economy.

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Pittsburgh Steel Sales Co., Pittsburgh, has appointed Edgar H. Wilson its representative for Texas, with headquarters at Houston, Tex.

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Revere Copper & Brass Inc., 230 Park avenue, New York, has opened an office at 911-12 Rhodes-Haverty building, Atlanta, Ga., in charge of Walter W. Fitts.

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Rhode Island Strip Steel Co., 295 Beverage Hill avenue, Pawtucket, R. I., has changed its name to Rhode Island Steel Corp. It has lately occupied its new plant at the above address.

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National Carbon Co. Inc., 30 East Forty-second street, New York, has bought the carbon electrode plant of Republic Carbon Co. at Niagara Falls, N. Y. The plant will be operated as Republic division of National Carbon Co. Inc. No change will be made in operating or sales personnel.

□ □ □

Hevi-Duty Electric Co., Milwaukee, has appointed Perfection Tool & Supply Co., B. J. Cahill secretary, 2832 Easton avenue, St. Louis, its district sales representative for Missouri. A service and sales agency on electric heat treating furnaces will be maintained.

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Pittsburgh Lectromelt Furnace Corp., Pittsburgh, is building a second 15 to 20-ton, top-charge, direct arc basic electric furnace for the International Nickel Co., to replace a door-charge type furnace. Economies of the top-charge furnace led to the second order.

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Taylor-Winfield Corp., Warren, O., manufacturer of electric spot, butt and seam welders, has established a plant at 14307 Third avenue, Detroit, which will be manned by a complete engineering staff. It will include an experimental department, machine shop, transformer department, assembly department and facilities for manufacturing special resistance welders and for redesigning and rebuilding used equipment. The main plant at Warren, O., will continue to manufacture standard and special machines.

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Joseph J. Kovar Co., Owatonna, Minn., manufacturer of agricultural implements, will be sold Aug. 20 by the trustees, Harold S. Nelson and associates. The sale will include the plant and equipment, real estate, patents, stock, book accounts and notes receivable, trade name and goodwill.

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Pittsburgh Water Heater Co., Pittsburgh, in receivership, has had a permanent trustee appointed by federal court under the recently amended bankruptcy act. John W. Patterson, formerly one of two temporary receivers, has been appointed permanent trustee.

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William M. Bailey Co., Pittsburgh, manufacturer of blast furnace specialties, has received an order from the Wheeling Steel Corp., Wheeling, W. Va., for rebuilding a hot blast stove at the company's Steubenville, O., works. This will be an exact duplicate of that built about a year ago at Steubenville, using the American steel stove bottom and a 3-inch open-joint checker.

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Timken Roller Bearing Co., Canton, O., has taken a contract from the Chicago, Milwaukee, St. Paul & Pacific railroad for complete roller bearing equipment for 50 streamlined, air-conditioned passenger coaches and 25 baggage cars which it will build in its own shops at West Milwaukee, Wis. Production of 200 bearings for the baggage cars is under way.

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Chicago Pneumatic Tool Co., 6 East Forty-fourth street, New York, which has been general sales agent for about two years for the Mitchell Diamond Drill Co. Ltd., San Francisco, has purchased patents, goodwill and tangible assets of that company and has taken over its personnel. Manufacture of Mitchell diamond drills, parts and fittings and ready-set bits will be continued at San Francisco for the present. Later the new owner will transfer manufacturing operations to its plant at Detroit.

Will Supply Stainless Steel

J. & J. B. Milholland Co., Pittsburgh, has been awarded a contract for 3522 pounds of stainless steel to be used on lock No. 7 in the Monongahela river near Pittsburgh.

Half-Year Exports Far Exceed 1933

EXPORTS of steel and iron products from the United States for the first six months of 1934 were 142 per cent larger than for the corresponding period of 1933, according to compilations of the iron and steel division, bureau of foreign and domestic commerce, Washington. Imports for the same periods show an increase of 9.2 per cent.

Total exports for first half of this year were 1,253,174 gross tons, compared with 570,750 tons in first half 1933. Imports were 167,638 tons and 152,260, for the first half of 1934 and 1933, respectively.

June showed a decline of 22,347 tons for the May export total, with 219,406 tons exported. In spite of this shrinkage the June total was the largest for the half-year except for March and May, and compares with 102,550 tons for June, 1933, a gain of 113.9 per cent.

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Commodity	June, 1934	May, 1934	June, 1933
Pig iron	266	478	94
Ferromanganese, spiegeleisen	2	.....	4
Iron and steel scrap	143,115	132,725	64,852
Ingots, blooms, billets, slabe and sheet bars	4,025	2,452	89
Bars, iron	46	262	43
Bars, steel	2,670	4,427	2,066
Bars, alloy steel	124	344	68
Wire rods	2,539	2,083	1,312
Boiler plate	265	50	37
Other plate, not fabricated	3,400	2,299	435
Skelp, iron or steel	3,976	31,882	2,570
Iron sheets, galvanized	80	187	128
Steel sheets, galvanized	4,866	4,629	3,278
Steel sheets, black	9,556	8,147	1,876
Iron sheets, black	294	455	206
Strip steel, cold-rolled	1,325	1,447	698
Hoop, band and scroll iron or steel	1,619	1,265	1,436
Tin, terne plate	10,206	10,541	5,651
Water, oil gas and other tanks, except lined	301	147	329
Shapes, not fabricated	2,066	4,932	819
Shapes, fabricated	1,333	1,155	1,199
Plates, fabricated	107	368	22
Metal lath	149	105	86
Frames, sashes and sheet piling	76	76	198
Rails, 50 pounds	1,152	4,904	385
Rails, under 50 pounds	713	407	139
Rail fastenings	210	691	157
Switches, frogs, crossings	153	57	53
Railroad spikes	137	102	75
Railroad bolts, nuts	41	39	19
Boiler tubes, seamless	611	639	176
Boiler tubes, welded	44	37	60
Casing and oil-line pipe, seamless	4,893	7,315	1,411
Casing and oil-line pipe, welded	627	1,166	428
Seamless black pipe, other than casing, etc.	448	196	108
Malleable iron screwed pipe fittings	224	247	159
Cast iron screwed pipe fittings	123	93	96
Cast iron pressure pipe and fittings for	2,174	246	1,000
Cast iron soil pipe and fittings for	124	160	450
Welded black steel pipe	1,375	1,539	1,080
Welded black wrought iron pipe	138	349	76
Welded galvanized steel pipe	1,867	1,903	1,561
Welded galv. wrought iron pipe	19	71	158
Riveted iron or steel pipe and fittings	47	78	1
Plain iron, or steel wire	1,592	1,470	752
Galvanized wire	1,657	1,584	921
Barbed wire	3,695	3,415	2,743
Woven wire fencing	120	129	79
Woven wire screen cloth	82	93	76
Wire rope	240	236	157
Other wire and mfrs.	574	405	264
Wire nails	1,578	1,402	1,141
Horseshoe nails	58	60	57
Tacks	35	51	23
Other nails, staples	386	310	322
Bolts, machine screws	436	436	263
Iron castings	512	597	167
Steel castings	193	168	41
Car wheels and axles	343	239	285
Horseshoes	6	2	22
Iron and steel forgings n. e. s.	365	441	149
Total gross tons	219,406	241,753	102,550

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1934		1933	
	Imports	Exports	Imports	Exports
Jan.	22,653	178,023	21,892	56,720
Feb.	25,407	151,184	19,748	63,936
Mar.	38,393	261,269	22,114	80,567
April	26,862	201,539	28,061	100,395
May	29,465	241,753	26,295	123,069
June	24,858	219,406	34,368	102,581
6 mo.	167,638	1,253,174	152,260	570,750
July	.....	.....	52,805	83,311
Aug.	.....	.....	46,839	119,374
Sept.	.....	.....	55,706	108,799
Oct.	.....	.....	46,673	164,755
Nov.	.....	.....	28,979	157,600
Dec.	.....	.....	31,310	184,585
Total	.....	.....	414,790	1,350,692

ORIGIN OF JUNE IMPORTS

Gross Tons

	Pig iron	Manganese ore	Ferromanganese
Netherlands	1,342	.....	.....
Norway	169	.....	2,082
Sweden	40	.....	.....
Canada	729	27	1,204
Kwantung	177	.....	.....
British India	2,711	.....	.....
Soviet Russia in Europe	.....	5,716	.....
Brazil	.....	4,673	.....
Cuba	.....	3,308	.....
Gold Coast	.....	5,089	.....
France	.....	.....	68
Germany	.....	.....	79
United Kingdom	.....	.....	182
Italy	.....	.....	147
Poland	.....	.....	99
Total	5,168	18,813	3,861

	Sheets, skelp and sawplates	Structural steel	Steel bars	Hoops and bands
United Kingdom	4	1	44	.....
Belgium	125	1,186	1,211	905
Sweden	3	.....	205	1
France	.....	200	277	313
Germany	.....	785	115	450
Austria	.....	.....	28	.....
Czechoslovakia	.....	.....	1	.....
Total	132	2,172	1,881	1,669

UNITED STATES IMPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Commodity	June, 1934	May, 1934	June, 1933
Pig iron	5,168	8,628	11,230
Sponge iron	258	111	105
Ferromanganese, spiegeisen	3,761	3,422	6,911
Ferrochrome	.....	14	.....
Ferrosilicon	298	87	47
Other ferroalloys	13	33	101
Scrap	3,454	6,975	4,058
Steel ingots, blooms, etc.	268	60	242
Concrete bars	65	90	313
Hollow bar, drill steel	75	64	90
Merchant steel bars	1,881	1,923	1,844
Iron slabs	.....	.....	.....
Iron bars	51	48	46
Wire rods	1,377	1,236	1,431
Boiler and other plate	10	22	2
Sheets, skelp, saw plate	132	174	626
Tin plate	36	25	6
Structural shaps	2,174	1,946	3,329
Sheet piling	666	443	.....
Rails and fastenings	527	201	110
Cast iron pipe, fittings	.....	4	71
Welded pipe	277	54	253
Other pipe	143	141	176
Barbed wire	880	1,333	368
Round iron, steel wire	228	260	169
Telegraph, telephone wire	.....	.....	.....
Flat wire, strip steel	125	92	102
Wire rope, strand	120	55	125
Other wire	163	3	105
Hoops and bands	1,669	1,350	1,982
Nails, tacks, staples	873	456	375
Bolts, nuts, rivets	12	35	16
Horse and mule shoes	66	52	19
Castings and forgings	88	128	116
Total, gross tons	24,858	29,465	34,368

Died:

ROBERT F. RINGLE, 49, works manager, Herman Pneumatic Machine Co., Pittsburgh, at his home in Zelienople, Pa., July 26. Born in Derry, Pa. in 1885, he became an apprentice with the Westinghouse Air Brake Co., Wilmerding, Pa., in 1901, and continued in the employ of that company until 1908. After spending two years with the Mesta Machine Co., he entered the employ of the Herman Pneumatic Machine Co. in 1910 as an engineer. A year later he was made chief engineer and in 1913 was promoted to works manager.

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C. A. Donovan, 48, assistant superintendent, City Machine & Tool Works, Dayton, O., in an automobile accident while on his way to Chicago recently. He had been with the company for 18 years.

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Walter B. Murdoch, 34, assistant superintendent of the plant of the Stanley Rule & Level Co., New Britain, Conn., in a Boston hospital, July 29, following an operation. He was a graduate of Massachusetts Institute of Technology, Cambridge, Mass.

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Frederick W. Lovell, 62, widely known construction engineer, while visiting in Mason City, Iowa, July 25, from heat prostration. His home was in Cleveland and he was secretary of the former McMyler-Interstate Co., Bedford, O., during the war when munitions were being produced there.

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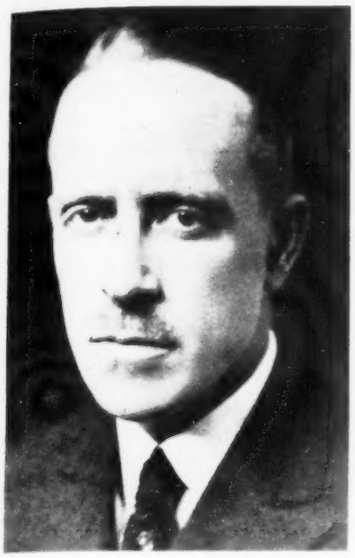
Walton Clark, 78, consulting engineer and former president of the United Gas Improvement Co., Philadelphia, in that city, July 30. He was considered one of the leading experts in the gas industry, was inventor of a process for the complete gasification of coal and contributed to the development of processes for operating water gas sets. He was president of Franklin institute, Philadelphia, from 1907 to 1924.

Industrial Men in the Day's News

C. F. Mackey, Robert E. Bartlett, James D. Quinn Figure in Realignment at Franklin Steel Works



C. F. MACKEY, for more than 30 years identified with the Franklin Steel Works, Franklin, Pa., subsidiary of the Chicago Railway Equipment Co., and since 1920 general manager, resigned, effectively July 1. He has been active in the rail steel industry over the past 25 years and has had an important part in the development of improved methods for the production of a quality product.

ROBERT E. BARTLETT has been appointed to succeed Mr. Mackey. Graduated from the law department of the University of Michigan in 1907, for ten years he was identified with the New York Central railroad and the United States railroad administration, and in 1920 was named general manager of the Empire Freight Car Co., Kankakee, Ill. From 1923 to 1931 was with the Ryan Car Co., Chicago.

JAMES D. QUINN has been promoted to the position of general sales manager of the Franklin Steel Works, effective July 1. He is well known in the industry, having been associated with the company since 1908, and from that time has been active in the development of this branch of the steel industry. During his term of service, he has been traffic manager, purchasing agent and sales manager.

M. J. Czarniecki has been elected vice president in charge of sales for A. M. Byers Co., Pittsburgh, succeeding H. W. Rinearson, resigned. Mr. Czarniecki was formerly general manager of sales.

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R. R. Weddell, formerly chief engineer and sales manager of the O. K. Tool Co. Inc., Shelton, Conn., has returned from England where he has been acting as consulting engineer to Richard Lloyd & Co. Ltd., Birmingham, establishing the design and manufacture and furthering sales promotion of inserted blade metal-cutting tools.

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Dr. J. S. Long, recognized authority on drying oils and at one time consultant for the New Jersey Zinc Co., the Armstrong Cork Co., the Raybestos Co., Chester & Wilmington Enameling Cos., and various branches of the Archer-Daniels-Midland Co. and William O. Goodrich Co., has been named chemical director of Devoe & Reynolds Co. and subsidiaries, with headquarters at Louisville, Ky. Lately he has been professor of chemistry at Lehigh university, Bethlehem, Pa., from which position he has resigned. He is the author of numerous technical books.

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Dr. Charles H. Herty Jr., for eight years active with the bureau of mines and the metallurgical advisory board of Carnegie Institute of Technology in the Pittsburgh district, was honored at a testimonial dinner Saturday evening, July 28, attended by about 120 steel mill metallurgists and engineers. A hand-decorated solid mahogany desk was presented to the guest of honor in appreciation of his work in improving steelmaking procedure and steel quality. The occasion marked the end of Dr. Herty's activities in the Pittsburgh district; he will leave shortly for another affiliation. His research projects relating to the operation and control of open-hearth furnaces are well-known to all steelmakers.

Dr. J. S. Long

Norman I. Stotz, Braeburn Alloy Steel Co., presided at the dinner. Speakers were: Dr. C. F. W. Rys, assistant to the president, Carnegie Steel Co., and L. F. Reinartz, works manager, American Rolling Mill Co., Middletown, O., and chairman of the open-hearth committee of the American Institute of Mining and Metallurgical Engineers. Letters were received from many leading figures in the nation's steel industry, paying tribute to Dr. Herty's work.

EDITORIAL

Invite Political Candidates To Visit Your Plant

OWNERS, managers, employes and others dependent upon industry for their livelihood should make politics the first order of business during the months of August, September and October. Never has the selection of sound, intelligent men for public office been as important to industry as it will be in the forthcoming elections.

This is true nationally and locally. In the United States congress all of the representatives and a third of the senators are to be elected this fall. Governors in 34 of the 48 states and thousands of members of state legislatures are to be chosen. Numerous county, municipal and other local offices are to be filled.

In the approaching election of candidates to these offices, the stamp of political party probably means less than at any time in many years. Due largely to the astounding developments since 1932, today the issue in politics is not whether the candidate is a Republican, Democrat or Socialist, but whether he is safe or unsafe. Some authorities use the convenient terms of conservatives and liberals to designate the distinction, but this is not an accurate classification. A conservative may be so reactionary as to be as dangerous as the most impetuous communist. Perhaps it is better to say that the issue lies between those who are practical, responsible and far seeing and those who are theoretical, irresponsible and short sighted.

Help To Elect Representatives Who Know Value of Industry To National Prosperity

From the standpoint of the interest of the general public and of industry, it is important that as many of the contested offices as possible be filled with men who appreciate the true role of industry in the social and economic fabric of the country. If selections are made on this basis, one need not worry whether the candidates are Republicans or Democrats, or conservatives or liberals.

We suggest that every industrial manufacturer—and particularly those whose plants are of small or moderate size and are situated in the smaller cities—make it a point during the next three months to invite each national, state and local candidate for public office to visit his plant. These aspirants should be brought in one at a time, and each should be prevailed upon to remain long enough to gain an idea of the more important problems confronting the establishment, its management, its stockholders and its employes.

The executives should impress upon each visiting candidate the amount of the company's contribution in taxes to the income of the community and the importance of its disbursements in wages and salaries to the community's trade and other activities. They also should show what reasonable profits mean in terms of dividends. In many cases the list of stockholders will reveal a wider distribution of dividends than is realized by the average politician. Also, the company officers may find it advisable to go into some detail as to finances, labor relations, freight rates, costs, tax rates, etc.

Visits Would Assist Candidates To See Fallacies in New Deal View of Industry

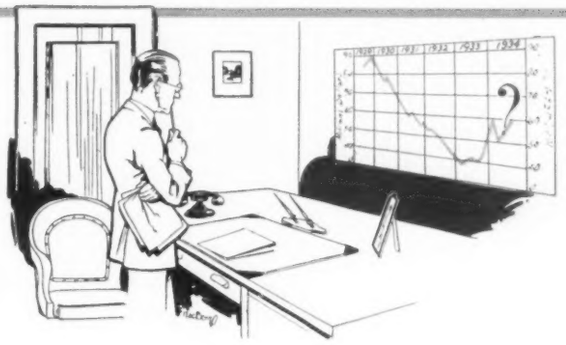
If every manufacturer would follow this suggestion, several important benefits would be realized. First, the company executives, in talking with the various candidates, could readily distinguish the anti-industrialists from those who appreciate the value of a prosperous industry. Secondly, every candidate would go away with a better understanding of the relationship of the plant to its community.

Even more important, however, would be the over all conception of industry derived by the candidates collectively. Far too many holders of public office in federal, state and local governments have accepted without question the new deal propaganda and innuendo to the effect that industry is comprised of gigantic corporations, most of them controlled by Wall street, many having tremendous balances in the banks, and the majority paying handsome dividends while giving sweat shop wages to their employes. These proposed visits, if carried out generally throughout the country, would dispel this false conception.

For instance, candidates, after visiting a few plants, could be made to understand that about 97 per cent of the 200,000 manufacturing establishments employ less than 250 persons, that about 90,000 plants have less than 6 employes, and that laws passed upon the assumption that industry is composed of large units are unjust to the majority of companies.

Call in your candidates for public office. A half-day of education at your hands will be well worth while to everybody concerned.

THE BUSINESS TREND



Business, Although Restricted, Is Better Than Sentiment

ALTHOUGH the recession in industrial activity in July proved to be somewhat in excess of the anticipated seasonal decline, the actual volume of business at the beginning of August still is better than business sentiment. Moreover, one finds more optimism among industrial executives than among bankers and economists.

In spite of the drastic drop in some lines of activity in July, the over all record for that month compares fairly well with that of July, 1933, which marked the peak of last year's sharp rise. Industrial production was off about 20 per cent. Car loadings and electric power output were almost on a par. Industrial employment was up moderately, and increases were registered in retail sales and in building contracts. Wholesale commodity prices, in spite of erratic fluctuations during the 12-month period, were slightly higher in July, 1934, than in the same month last year.

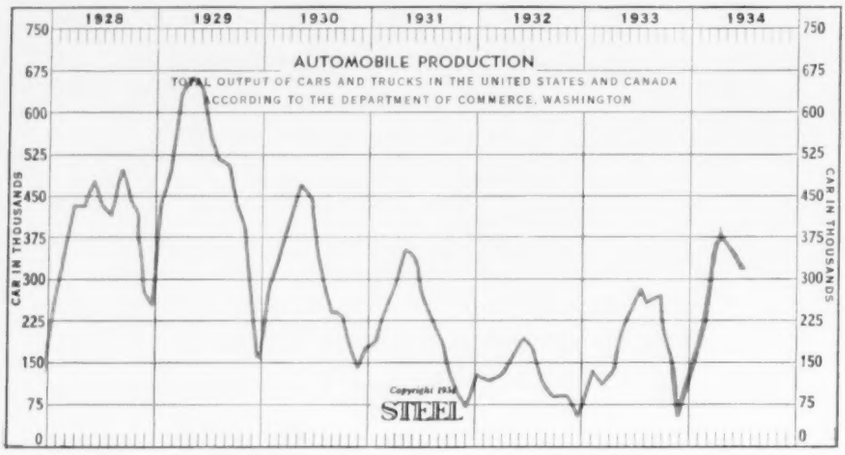
Except for the unfavorable position of industrial production, there is nothing in this comparison to give business the jitters. The low ebb of confidence is due not so much to the state of business as to the trend of influences which may affect future business adversely.

Bars To Reasonable Profits for Industry Must Be Removed to Restore Confidence

For example, the current release of earnings reports for second quarter shows gratifying profits for many companies. But sentiment today pay little attention to these reports. Instead, it ponders over the likelihood that the lower volume of the third quarter will bring back scores of deficits in the next batch of earning's statements. Clearly the basis for today's lack of confidence is the conviction that present conditions make it extremely difficult to make industrial profits. No matter what anyone says to the contrary, profit still is the key to prosperity, and until the opportunity for profits is restored, recovery will be painfully slow.

1934	Per Cent
June	84
May	86
April	86
March	85
Feb.	81
Jan.	78

1933	Per Cent
June	91
May	78
April	66
March	59
Feb.	63
Jan.	65



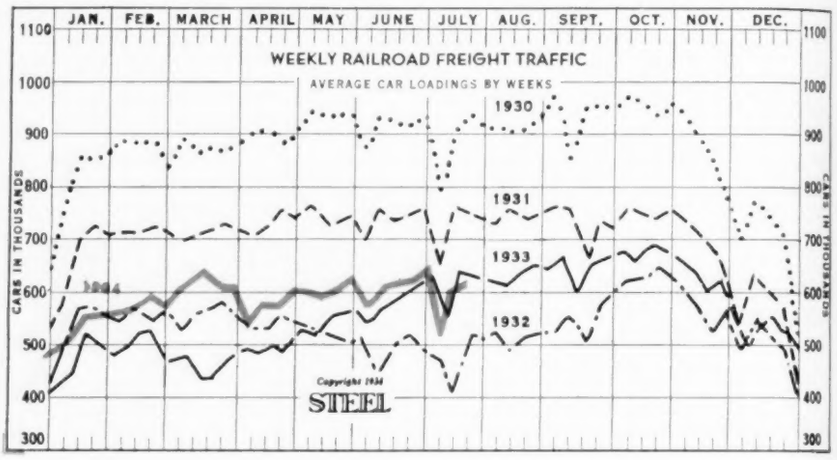
June, 1934	321,596
May, 1934	351,813
June, 1933	257,613

Automobile Production Declines in June

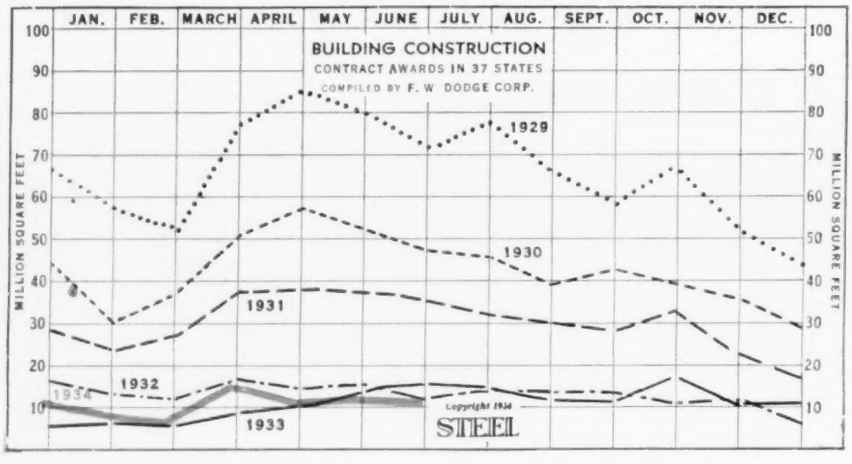
Automobile production in the United States and Canada during June declined 29,857 units, the second consecutive recession since the peak in April. Total output during June was 321,956 cars, of which 308,051 were produced in the United States and 13,905 in Canada. In the preceding month output totaled 351,813 units of which 20,161 were produced in Canada. According to figures compiled by the department of commerce, in June, 1933, production amounted to 257,613 cars, 250,290 being produced in the United States.

Freight Loadings Continue Upward Swing

Loadings of revenue freight in the week ended July 21 totaled 614,864 cars, an increase of 12,086 over the preceding week, a decrease of 34,050 cars compared with the like week of 1933 but a sharp increase of 112,952 cars over the corresponding week of 1932. According to the weekly report of the American Railway association, the increase during the week over the preceding week amounted to 2 per cent and was slightly greater than the usual seasonal increase between those weeks.



	1934	1933
July 21	614,864	648,914
July 14	602,778	653,661
July 7	619,807	543,510



June, 1934	13,986,500
May, 1934	14,664,400
June, 1933	16,075,400

Building Awards Remain Inactive During June

Building awards as measured in new floor space in 37 eastern states remained practically unchanged during June. According to the report of F. W. Dodge Corp., total construction for the sixth month involved 13,986,500 square feet as compared with 14,664,400 in May. In June, a year ago, awards totaled 16,075,400 square feet. In the six months of 1934 awards for new space have aggregated 75,461,200 square feet compared with 67,947,900 in the same period last year.

Sometimes the sales appeal of stainless is lost because the products are not identified

EMPHASIZING "STAINLESS" INSTEAD OF BRAND NAMES WILL AID SALES

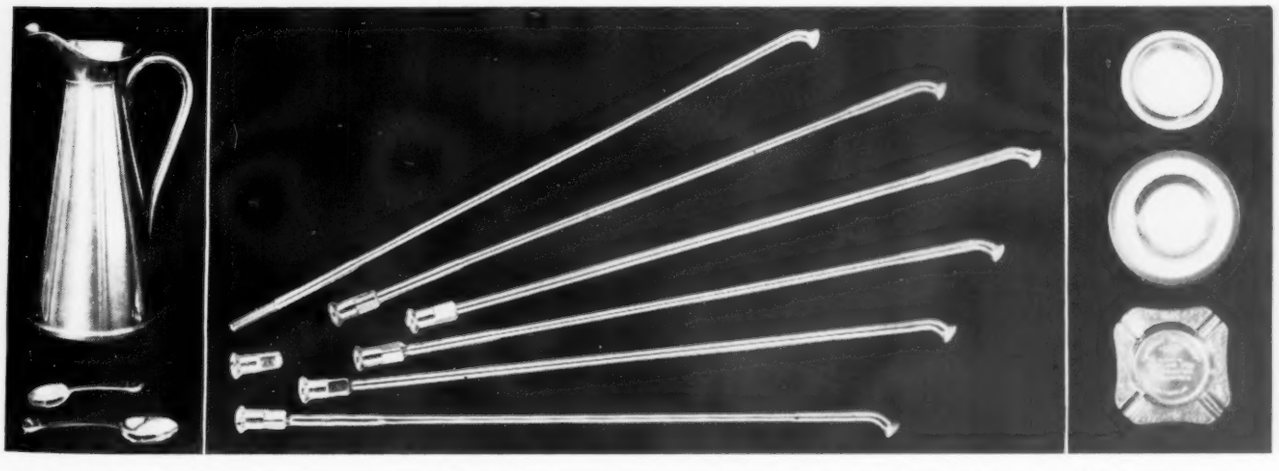
STAINLESS steel manufacturers have been putting the cart before the horse. They have been promoting brand names and have made the public conscious of these names, but they have failed to identify their product as stainless steel. The general public does not appreciate stainless steel in its generic sense, for the simple reason that it has not been taught to appreciate it.

In numerous cases recently, clerks in department and other stores have been asked for stainless steel kitchen equipment, cutlery, etc., only to reply that they did not carry anything like that. Further questioning has revealed that the store did carry stainless steel products, but under a brand name which the salesmen did not identify as stainless steel.

The point involved here has been realized by a few of the stainless steel manufacturers lately to the extent that their paid advertising is carrying, along with their brand names, the words "stainless steel." This, however, is but the merest beginning of what these manufacturers must do if they are going to benefit fully from the vast potential demand for stainless steel.

Individually, the stainless steel producers have done a fine sales promotional job. But the time has arrived when the potential possibilities best can be accomplished by some form of group action. An organization functioning somewhat along the lines of the Copper and Brass Research association could do wonders for stainless steel.

The first and most important job to be done is to acquaint the general public with stainless



If these articles are marked only with brand names, how can buyers know they are stainless?

steel in a general sense. The public should be made stainless steel-conscious rather than only trademark-conscious. This in no sense is meant to imply that brand names should not be advertised. In stainless steel, as in other products, brand names tend to become associated with the quality that the manufacturer puts in his product.

Likened to S.A.E. Series

The situation is somewhat comparable to that involving S.A.E. steels. Whereas most of the steel companies produce and sell S.A.E. steels, some of them have established an enviable reputation for quality of their steel. But all of them are gainers from the general understanding and acceptance of this classification of steels.

In the same way, all makers of stainless steels would benefit from a general appreciation of stainless steels.

Another essential activity which would benefit the stainless steel producers would take the form of giving greater support and encouragement to the fabricators and distributors of stainless steel products.

This work would involve much more than advertising the product of the fabricators. Such advertising is held to be good, in theory, as stimulating the sales of the manufacturer by promoting the sales of his fabricator-customers.

What would help even more would be for the stainless steel producers to give intensive study to all purposes to which stainless steel could be adapted. That is, they would benefit from studying their distribution and promotional problem right through the fabricators to the ultimate buyers of stainless steel fabricated products.

This study would involve methods of manufacture, the design and styling of fabricated products and the building up of public appreciation and acceptance of these styles.

To be specific, a stainless steel knife or fork may be a desirable table piece but it will not sell until the householder is of that opinion.

Too, stainless steel lends itself to certain design and style possibilities, which should be sold to the ultimate buyers through educational work.

Under such a co-operative plan, the whole industry would set up an acceptance of its common product and then each manufacturer, by initiative and intelligence in sales effort, and by quality of product, would be in the best position to drive for his share of the resulting increased business.

Such co-operative work would place more fish in the stainless steel pool, and enable each producer to catch a larger string with his particular kind of tackle.

Welding Procedure Developed for Repairing Manganese Steel Parts

USE of high-manganese steel for equipment requiring high resistance to abrasion or impact has been increasing constantly. Consequently, the repair and rebuilding of manganese steel parts is a subject of interest to many industries. A recommended oxyacetylene welding procedure has been developed which is claimed to insure uniformly satisfactory results if properly applied.

Hadfield's steel is the term commonly applied to this special steel which contains from 11 to 14 per cent manganese and 1.00 to 1.30 per cent carbon. Its surface hardness, while low at first, increases rapidly by mechanical deformation, a quality which points immediately to its use for parts subjected to severe abrasion. Furthermore, it has a lower thermal conductivity and a higher coefficient of expansion than ordinary carbon steel, and its physical properties change with different degrees of heat. These characteristics necessitate a certain care in the welding process so that there may be no danger of cracking due to shrinkage and so that the steel on either side of the weld may not be weakened seriously.

According to information supplied by Linde Air Products Co., New York, the preparation of a manganese steel casting for welding is similar to preparing an ordinary carbon steel casting. Edges to be welded should be veed to an included 90-degree angle either by grinding or by the use of the oxyacetylene cutting blowpipe. The latter method generally will be found more satisfactory, as the wear-resisting properties of manganese steel make machining difficult, but care must be taken after using the cutting blowpipe to remove all traces of adhering oxide, either by pickling or grinding.

Preheating Is Required

After this preparation, the entire casting should be preheated. For large castings this should be done slowly in a charcoal-fired preheating furnace of brick, but the welding blowpipe may be used on smaller castings if the body of the casting is protected by sheets of asbestos paper. During both the preheating and welding the casting should be supported carefully, to avoid any stress or strain.

No flux is needed for the welding, provided a slightly excess acetylene flame is used. This excess should be just enough to make the metal flow smoothly and evenly, and not sufficient to permit an undue amount of carbon to be absorbed in the weld. An ordinary 12 per cent manganese steel welding rod should be used. The slightly reducing flame allows little loss of manganese through oxidation, and hence makes unnecessary the use of a welding rod containing an excess of manganese.

Details of Actual Welding

A comparatively large welding tip should be used and a fairly large puddle of melted metal should be maintained. The rod should not be rubbed in the weld; the end of the rod should be kept under the surface of the puddle of molten metal. When the puddle has been built up sufficiently, it should be melted in the base metal by directing the flame around the edges until the weld metal and the base metal flow together through their own fluidity. Care must be taken, however, to avoid building up too large a puddle, because it may flow over onto the solid metal with resultant loss of fusion between the weld metal and the base metal.

After completion of the weld the casting should be allowed to cool slowly. If the weld is to withstand considerable stress, the entire casting should be reheated to a uniform temperature of about 1940 degrees Fahr., nearly a light yellow heat, maintained at this temperature for 30 minutes to 1 hour, and then immediately quenched by immersing the whole casting in water. This treatment eliminates brittleness in the weld metal and in the small zone of the casting surrounding the weld.

This method gives satisfactory results unless the welded part is required to have unusually high tensile strength. Such cases are rare, however, as manganese steel is used principally for its abrasion and shock resisting properties, and welds subjected to these conditions will be found to stand up satisfactorily.

Make New Crossing Guard

Shop fabrication has been completed at Detroit under the supervision of Evans Products Co., on an automatic crossing guard for the new Michigan state draw bridge at Manistee, Mich. Recently STEEL (June 25, pp. 32, 33) described in detail the new market for steel in the form of channels, floor plates, strip, shafting and springs that might be developed from this unique automatic railroad crossing guard.

Workmen are shown laying cast iron blocks in a British street. These blocks are of the design sponsored by Iron Roads Ltd.

Cast Iron Blocks Prolong Life Of Road Surfaces in Europe

BY E. W. DAVIS*

IN EUROPE—England particularly, and Germany and France to a lesser degree—cast iron pavements are being used on an increasing scale and with satisfactory results. The largest and most recent installation is in the Mersey tunnel, at Liverpool, where about three miles of pavement have been surfaced with square cast iron blocks.

Two distinct systems of cast iron paving are being tried out extensively in England. In one system, cast iron sections are used as surfacing for concrete, somewhat as brick or wood blocks are used in this country. In the other system, cast iron grids, supported directly on a crushed rock or gravel sub-base, replace the usual concrete base, and asphalt mastic is placed directly on this cast iron foundation.

The two types of surfacing blocks generally used in England are those made by Stanton Iron Works Co. Ltd., Nottingham, and by Iron Roads Ltd., London. Blocks made by the former are 12 inches square and those by the latter are in the form of equilateral triangles 10 inches on a side and are used in what is called tripedal unit system. In both cases, the blocks are about 2 inches thick and hollowed out on the under side in order to reduce the weight to about 25 pounds per square foot of paved surface.

Upper surfaces of the blocks are studded in a diamond-shaped pattern not unlike the treads of some makes of automobile tires. They ordinarily are laid on a 6 or 8-inch layer of concrete covered with a thin layer of asphalt mastic. About ¼ inch is left between the individual blocks and this space is also filled with mastic. The claim made for the triangular blocks is that they are supported at only three points and cannot rock. The square blocks are supported at five points.

Advantages stated for the cast iron block type of surfacing are as follows:

(1) Skid-proof in all kinds of weather.

(2) Claimed to outlast granite blocks, brick, or wood blocks.

(3) Distribute the load over a considerable surface of the cement base and, for this reason, the base is not subjected to sharp impact.

(4) Easily taken up and relaid when it is necessary to excavate for sewer, water, gas, or electric service lines.

(5) Do not shrink, swell, chip, or develop frost cracks.

(6) Automobile tires are actually "geared to the road," making the action of the brakes effective and yet causing no increase in tire wear.

(7) Clean, sanitary and glare-proof.

(8) No more noisy than any other type of pavement for automobile or truck traffic.

(9) Not affected by grease or oil.

(10) Quickly laid by unskilled labor.

Cast Pavement $5 Per Yard

Develoment of this type of pavement in England dates from about 1928. The first installations were made where maintenance on other types of pavement was excessive. They were put down at bus stops, taxicab stands, on bridge approaches, and between streetcar tracks. The results were so satisfactory that iron blocks are now being used for the resurfacing of worn out cement pavements in London and many of the surrounding boroughs.

The accompaying table shows some

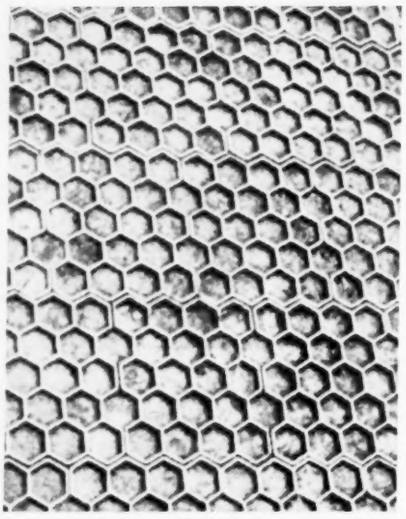
Street in Accrington, England, paved with cast iron blocks furnished by Iron Roads Ltd. The center lane is lighter in appearance because it was paved at a later date, after trolley tracks had been removed

*The author, E. W. Davis, is associated with the mines experimental station of the University of Minnesota, Minneapolis.

of the installations of cast iron surfacing blocks in England regarding which some definite information has been received.

Comments from engineers in charge of installation and maintenance of these cast iron pavements indicate that the service obtained from them is satisfactory. One engineer reports there has been no cost of maintenance on the heavily traveled Rochdale section and says, "—it would appear that the cost of maintaining such a road would be almost negligible for many years to come." Another reports that in snowy and icy weather the cast iron road surface is noticeably safer than other types of roads.

Cast iron blocks and the special mastic for laying are delivered to the paving job in England at a cost of 16 to 18 shillings per square yard, and the labor for laying amounts to about 2 shillings per square yard. This gives a total cost for the finished surface of 18 to 20 shillings, or about $5 per square yard. The cost of the cast iron blocks alone is about 14 shillings, or $3.50 per square yard, and since a square yard of blocks will weigh about 235 pounds, the cost of the castings is about $30 per ton. Cost of foundry iron in England is about $17 per ton against a cost in this country of about $19.



A Schmid-Laufach (German) cast iron honeycomb grid foundation before the mastic has been applied

No special alloys are added to the iron. The studs themselves are in some cases hardened, but the castings are of a simple nature and no unusual foundry practice is required in their manufacture. One English company advertises that it will surface concrete paving with these cast iron blocks and take care of all maintenance for 10 years at a total cost of 18 shillings per square yard. As a basis for comparison, first-class brick surfacing costs about $2.50 per square yard in Minneapolis.

The second system of paving used to some extent in England consists in laying 12-inch square perforated and ribbed cast iron plates directly on a base of gravel or crushed rock. These plates, of an interlocking type, weigh approximately 13 pounds each and are made by the Shotts Iron Co., Edinburgh. After the plates are laid and lightly tamped into place, tarred macadam or asphalt mastic is rolled on as a surfacing. These plates are 5/16-inch thick with ribs 7/16-inch high. They are laid with the ribs up and will support a concentrated load of 4 tons under the most adverse conditions. It is claimed that this type of pavement is less expensive than concrete pavement with asphalt surfacing and will outlast this type considerably.

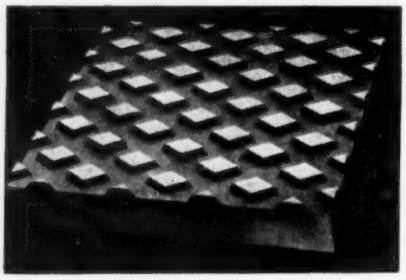
France Considers 500-Mile Cast Road

In Germany the Schmid-Laufach system of road construction, using an open honeycomb cast iron grid, has been in use for some time. The grid sections, about one-third of a meter square and interlocking, are laid directly on a sub-base of crushed rock or gravel. They are tamped lightly into place and then the openings in the grids are filled with tarred rock, concrete, or asphalt mastic. This material is rolled or tamped into place and the pavement is ready for use. With wear, the filling material is depressed slightly between the honeycomb sections, which are about 5 inches wide, leaving the cast iron edges slightly protruding and thus making a skid-proof surface.

Sections of this type of roadway have withstood the most severe traffic conditions for 1½ years under weather conditions that cause great damage to other types of pavements. Total cost of installing this type of road surfacing is stated to be about 5.50 reichsmarks per square meter, or about $2.10 at the present rate of exchange. These grids now are being made 3.28 feet wide and as long as the traveled surface is wide, and are laid directly on the shaped subgrade.

In France considerable attention has been given to the use of cast iron in highway construction . In 1926 it was proposed to surface a highway from Paris to Marseilles, a distance of 800 kilometers (500 miles), with cast iron. This road was to be 5.5 meters (18.04 feet) wide and to require about 3,000,000 tons of iron. The cost was to be 256 million francs.

One of the arguments in favor of this road was that the French blast furnaces were not operating at full capacity and could convert more iron



A cast iron paved street in Burnley, England, the two illustrations above showing details of both sides of the blocks used in this pavement. Blocks are a product of Stanton Iron Works

ore into iron than they were then doing. This surplus iron made from the ore mined near the German border could be used to surface highways in the interior of France. In times of need, the iron surfacing blocks could be removed from the roadway and converted into other more important commodities, and for a few years the concrete base alone could be used as a highway.

The soundness of this argument is not important. The important fact is that cast iron surfacing in France is considered so permanent that the metal can be considered as a reserve supply of cast iron available for any future use. As a justification for this conclusion, it is stated that some manhole covers have been in use in Paris for over 100 years and while the pavements surrounding them have been replaced many times, the cast iron covers are still in execellent condition.

Study Cast Block Designs

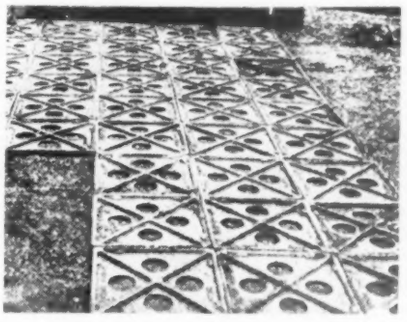
Several types of cast iron surfacing blocks now are undergoing experiments in Paris and several sections of city streets have been paved with these blocks. General Gascouin, who has been interested in cast iron roads for many years, has designed and tried out several types of surfacing blocks. The latest type is in the form of the letter L, 15.4 centimeters (6.06 inches) on each leg and 7 centimeters (2.76 inches) thick. These blocks are completely cored out on the under side to reduce the weight and a hole is cored in the top through which cement is poured to completely fill the space between the cement base and the casting. This type of surfacing block weighs 130 kilograms or 287 pounds per square meter of paving surface and can be laid in different designs to suit traffic conditions. Some of these blocks have been in use for over two years and are reported to show no signs of wear.

The second type of surfacing block, made by the Societe des Hauts-Fourneaux de Saulnes and in use on some of the Paris streets, is quite similar to the tripedal system in use in England. The blocks are about 24 centimeters (9.45 inches) on a side, are laid on a concrete base, and are cemented together with asphalt mastic. Arrangement of the studs on the wearing surface differs somewhat from the English system, but otherwise the blocks are very much the same.

French paving authorities have given much attention to the arrangement of the studs and corrugations on the exposed surface of the iron paving blocks. Special designs for one-way streets and for steep hills are being investigated. Horse-drawn vehicles are common in some districts in Paris and a special arrangement of studs is proposed for these districts in order that the horses may have a firmer footing. French authorities are investigating the possibility of controlling automobile speeds by the proper arrangement of corrugations and waves in the paving surface. Other designs have been made for ease of cleaning and for artistic appearance.

Cast Iron Surfaced Roads in England

Location	Dimensions, feet: Length	Width	Foundations	Shape of blocks	Time in use, years
Accrington	310	40		Triangular	2
Burnley	600	24	Concrete	Square	2
Deptford	Bridge decking			Square	
Folkestone			Concrete, 6"	Square	2
Hampstead	Cab stands				
Ilford	Trial section		Concrete, 8"	Square	
Leyton	Trial sections		Concrete, 9"	Square	3
Liverpool	15500	36		Square	
London	Around factory		Concrete, 6"	Square	
Luton	Around factory		Concrete, 6"	Square	
Rochdale	Trial section		Concrete, 8"	Square	2
Sheffield	150	10	Concrete, 6"	Square	2
Stockport	Trial section		Concrete, 6"	Square	
Stratford	150			Triangular	3
Worcester			Concrete, 8"	Triangular	
Birmingham	Trial section		Old concrete		1
London	Trial section		Concrete, 12"	Square	2



Cast iron foundation plates, a product of the Shotts Iron Co. These will later be covered with mastic

Iron Outlasts Other Materials

Considerable attention also has been given to the wearing qualities of cast iron blocks of different designs, and the Societe des Hauts-Fourneaux de Saulnes has installed a test course on which various types of pavements are laid and worn down by the action of an iron wheel. The course is in the form of an annular ring, 9 meters (29.5 feet) outside diameter and 4 meters (13.12 feet) inside diameter. Sections of the various types of pavements to be tested are laid in this annular ring. In the center of the ring is a pivot point from which an arm extends over the paved surface. Wheels of various types are attached to this arm and a horse, hitched to the end of the arm beyond the pavement, drags the wheels over the paved surfaces. The standard test wheel is of cast iron, 1 meter (39.37 inches) in diameter and 10 centimeters (3.94 inches) wide where it comes in contact with the pavements. This wheel weighs 1500 kilograms (3307 pounds) and exerts a pressure of 150 kilograms per centimeter (2133 pounds per inch) of width which is the load specified by the French road code. Since the weight is not cushioned by springs or rubber and since

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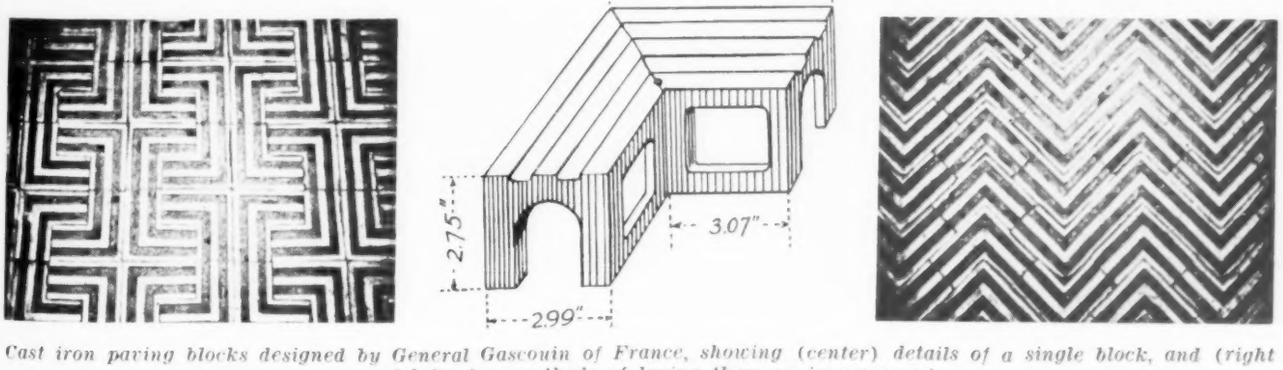


Cast iron paving blocks designed by General Gascouin of France, showing (center) details of a single block, and (right and left) two methods of laying them up in pavement

Heavy-Duty Power Presses of Welded Plate Construction

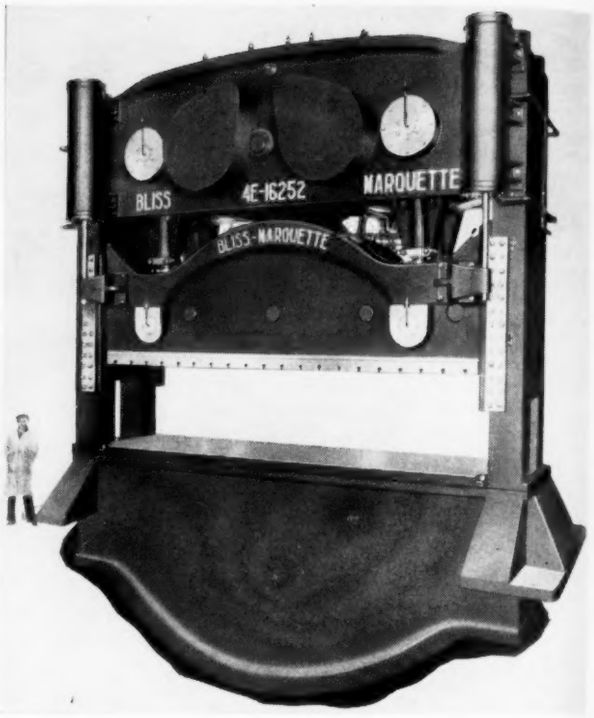


FIG. 1 — Claimed to be the largest press of its type ever built, this giant has a working capacity of 1800 tons, weighs over 37 tons

STRIKING examples of progress in welded steel plate construction, two new heavy-duty power presses recently have been built at the Toledo, O., plant of E. W. Bliss Co. Both presses, shown in accompanying illustrations, are of novel design with short shafts running front to back, eliminating torsional strains and connection back thrust against the frame.

The unit shown in Fig. 1 is of the four-point type with connections at the four corners of the slide, adapting it to widely unbalanced loading. The press, said to be the largest of its type ever built, has 16-inch shafts in shear and is rated for a working capacity of 1800 tons plus 300 tons for the drawing cushions. It is 252 inches wide, between housings, and the bed is 68 inches front to back, while the slide face measures 241 inches by 52 inches. Stroke of the slide is 16 inches and the speed seven strokes per minute. Weight complete is about 750,000 pounds, or over 37 tons. Welding assembly work was done by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., with welding quality steel plate furnished by the Carnegie Steel Co. The press is to be used for forming two automobile frame side rails per stroke from 5/32-inch steel blanks or one truck side rail per stroke from ¼-inch stock.

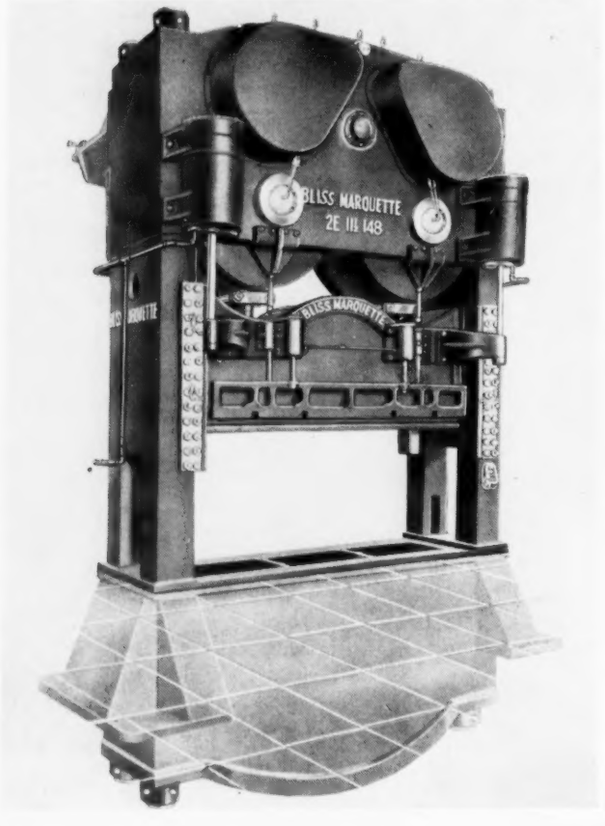


FIG. 2 — Double eccentric press of the front to back shaft type, rating 1200 tons. Both this and the unit above are equipped with hydropneumatic drawing cushions in the beds with automatically locked timing devices

Fig. 2 shows the other press, a double eccentric machine of the new front to back shaft type. It has a rating of 1200 tons, a stroke of 18 inches and speed of 10 strokes per minute. The slide is fitted with right and left cross bar knockouts which are air counterbalanced. Bed area is 50 by 148 inches.

Welded members were fabricated by Lukenweld Inc., division of Lukens Steel Co., Coatesville, Pa. A fast acting and simple pneumatic friction clutch with simplified electric control provides convenience and freedom from maintenance costs as it is self-adjusting over a wide range of operation.

Presses in both illustrations are equipped with hydropneumatic drawing cushions in the beds with automatically timed locking devices, built by Marquette Tool & Mfg. Co., Toledo, O. Three cushion units in the press beds are controlled as a single unit and pressure is adjusted to gage by a turn of the wrist. Air counterbalance cylinders are furnished at the four corners of each slide.

As pointed out by the builder of the presses, the use of welded steel plate compared with equivalent cast semisteel frame construction is necessarily more expensive when prop-

erly done, but saves weight and reduces the possibility of fatigue failure due to overloading. All welds under stress were made with coated rod and with the piece in proper position. Joints were chamfered and close fitting. In many cases layers of weld metal were peened with air hammers. All welded members were annealed to remove internal strains due to local temperature differences and the running of parallel welds. Both welding and annealing were planned to avoid distortion in finished parts.

All bearings on shafts and gearing are bronze bushed or bronze lined with the exception of Timken tapered roller bearings used for the drive-shaft and flywheel.

Welding Society Prepares Program for Its Fall Meeting in New York

THE American Welding society has announced tentative program for its fourteenth fall meeting to be held at the Hotel New Yorker, New York, Oct. 1-5, in connection with the National Metal congress.

Sessions will begin on Monday afternoon, Oct. 1, when Dr. D. S. Jacobus, president of the society, will make an address of welcome. Immediately following this address, the Miller memorial medal will be awarded.

Seven technical sessions will be held, beginning Monday afternoon and ending Thursday afternoon, and nearly 30 papers are listed for presentation. Among topics to be considered at individual sessions are "fundamental research in welding," "railroad welding," and "qualifying operators of welding equipment and expenses incurred therein," the latter a symposium.

The annual banquet will be served at Hotel New Yorker on Thursday evening, Oct. 4. Friday has been set aside for plant visitation.

The tentative program is as follows:

Monday, Oct. 1

MORNING

Registration.

AFTERNOON

Address of welcome by President D. S. Jacobus, Babcock & Wilcox Co., New York.

Presentation of Miller memorial medal.

"Steel in Residence Construction," by F. T. Llewellyn, United States Steel Corp., New York.

"Use of Polarized Light as Applied to Welding Products," by E. W. P. Smith, Lincoln Electric Co., Cleveland.

"Impact Resistance of Welded Joints," by W. Spraragen, secretary, American Bureau of Welding, New York.

EVENING

Dinner meeting, board of directors, Hotel New Yorker.

Tuesday, Oct. 2

MORNING

"A Critical Examination of Welded Pipe Materials," by D. H. Corey, engineer, Detroit Edison Co., Detroit, and A. E. White, director, department of engineering research, University of Michigan, Ann Arbor, Mich.

"Investigation of Welded Seat Angle Connections," by Inge Lyse and N. G. Schreiner, Fritz engineering laboratory, Lehigh university, Bethlehem, Pa.

"Photoelastic Studies of Seat Angle Problems," by Inge Lyse and Douglas M. Stewart, Fritz engineering laboratory, Lehigh university, Bethlehem, Pa.

"Welding in Engineering Education," by J. H. Zimmerman, Massachusetts Institute of Technology, Cambridge, Mass.

AFTERNOON

Fundamental Research in Welding

"Effect of Peening on Physical Properties of Welds and Stress Relief," by O. M. Harrelson, Georgia School of Technology, Atlanta, Ga.

"Notes on the Fatigue Testing of Welds," by J. H. Zimmerman, Massachusetts Institute of Technology, Cambridge, Mass.

"Some Tests of Thermit Welds," by Percy Hodge, Stevens Institute of Technology, Hoboken, N. J.

"Welding of Cast Iron," by John A. Needy, dean, Ohio Northern university, Ada, O.

"Residual Welding Stresses," by R. E. Jamieson, McGill university, Montreal, Quebec.

"Welding of Cromansil Steel," by H. M. Boylston, Case School of Applied Science, Cleveland.

EVENING

Conference and meeting of fundamental research committee, American Bureau of Welding, for benefit of university research workers.

Wednesday, Oct. 3

MORNING

"Silver Solders and Fluxes," by R. H. Leach, Handy & Harman Co., New York.

"Metal Spraying," by E. V. David, Air Reduction Sales Co., New York.

"Hard Facing," by B. E. Field, chief metallurgical engineer, Haynes Stellite Co., Kokomo, Ind.

"Flame Machining," by representative of Linde Air Products Co., New York.

AFTERNOON

Railroad Session

"Track Maintenance," by I. H. Schram, engineer, maintenance of way, Erie railroad, Cleveland.

"Welded Rail Joints in Main Line Track," by H. S. Clark, engineer, maintenance of way, Delaware & Hudson railroad, New York.

"Technical Phases of Application of Welding in Hi-Tensile Division of Edward G. Budd Mfg. Co.," by M. B. Butler, Edward G. Budd Mfg. Co., Philadelphia.

Thursday, Oct. 4

MORNING

"A Study of Alternating-Current Arc Welding Circuit Characteristics," by A. M. Candy, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Automatic A. C. Arc Welding Class I Pressure Vessels," by O. A. Tilton, General Electric Co., Schenectady, N. Y.

"Impact Resistance of Some Steels and Welds at Sub-Zero Temperatures," by R. K. Hopkins, M. W. Kellogg Co., Jersey City, N. J.

"Flame Cutting," by Bradley Stoughton, Lehigh university, Bethlehem, Pa.

AFTERNOON

Symposium on Qualifying Operators of Welding Equipment and Expenses Incurred Therein

"Boiler Welding," by W. D. Halsey, Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn., and Alexander Kidd, M. W. Kellogg Co., Jersey City, N. J.

"Shipbuilding," by E. D. Debes, Bethlehem Shipbuilding Co., Quincy, Mass., and H. W. Pierce, New York Shipbuilding Corp., New York.

"Structural Welding," by G. D. Fish, Westinghouse Electric & Mfg. Co., New York.

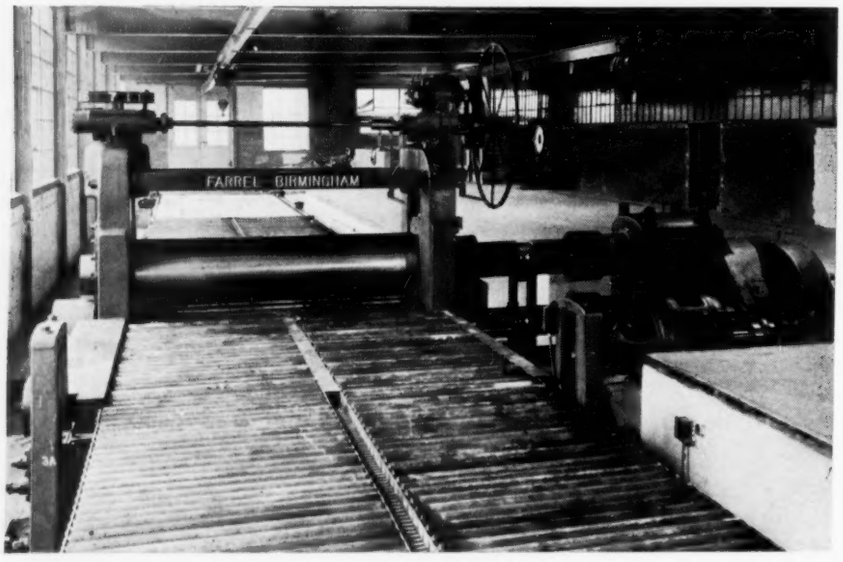
"Pipe Welding," by Dr. S. Lewis Land, Heating and Piping Contractor National association, New York.

"Testing of Welders" by J. W. Owens, director, National Weld Testing bureau, Pittsburgh.

TWO DECADES OF SERVICE FOR SHEET IRON ROOFS: Inspection of the sheet iron roofs of 250 passenger cars of the elevated lines of the Chicago Rapid Transit Co., Chicago, recently revealed that the roofs, installed in 1913, are still in good condition, after 21 years of service. According to H. A. Otis, car equipment engineer, none of the Toncan iron sheets, supplied by Republic Steel Corp., Youngstown, O., and used for the 250 roofs, has been replaced because of rust or corrosion which is severe in large metropolitan centers

Bevels Road Grader Blades By Machine Gas Cutting

A manufacturer of road building equipment recently installed automatic oxyacetylene cutting equipment to bevel the edges of grader blades. Previously the bevel had been cut on a planer. Experience has indicated that a 9½-foot blade can be beveled on one side in 8 minutes, or both edges in 16 minutes, actual torch operation. An average of 25 minutes is required to set up the blade and bevel both edges. Cost of job, including labor, oxygen and acetylene, is 87 cents. Formerly the blades were sent out to a contract shop for planing and the cost was $3.50, therefore, the oxyacetylene process effected a saving of $2.63 per blade. As these blades are made of plow steel, the cutting operation leaves a harder surface on the face of the bevel than otherwise can be obtained by planing. Many of the blades are ordered hard faced, but in cases where hard facing is not specified, this hardening feature—although a small item—is an important one.



LEAD COMPANY INSTALLS NEW SHEET MILL: Under construction for several months, the new sheet lead mill of the Flemm Lead Co. Inc., Long Island City, N. Y., one of the few of its type in the country, was placed in operation July 1. Rolling mill, shown above from the feed side, comprises two chilled iron rolls 28 inches in diameter with 114-inch face, supported in brass bearings in cast iron housings. Top roll is counterbalanced and held against the roll adjusting screws by weights. A 10-horsepower motor operates the adjusting screws; a 200-horsepower alternating-current motor drives both rolls of the mill through a pinion stand and gear reduction unit. To support the material and to feed it into and receive it from the rolls, tables are provided on each side of the mill, made up of a driven and an idler section on each side of the rolls and a finishing or cutting table on one side only. Total length from end to end of tables is about 113 feet. Mill equipment, designed and built by the Farrel-Birmingham Co. Inc., Ansonia, Conn., will produce sheets up to 9 feet wide

$ $ $

Nitric Acid Shipped in 18-8 Welded Steel Drums

Several large chemical manufacturers use stabilized, low-carbon 18-8 stainless steel for the manufacture, storage and shipping of nitric acid. The drums are of 55-gallon capacity and are welded construction. Because of the low carbon content of the stainless, no subsequent annealing is required following welding. This same type of drum is being used for shipping a well-known soft drink syrup. Smaller barrels of 15½-gallon size are being used for transporting beer.

$ $ $

Foundry Cranes Built To Meet Overload Demands

Under stress of circumstances in many cases foundry cranes are forced to lift loads greatly in excess of their rated capacities. Apparently crane manufacturers provide for these occasional contingencies. In a recent instance, a 30-ton crane was employed to carry an unusually large steel casting from the casting pit to the cleaning floor. Combined weight of the casting and enclosed cores was approximaely 60 tons.

$ $ $

Worn Spindles Brought To Size by Metal Spraying

Textile plants find that small motor spindles frequently become damaged because ball-bearing collars turn on the spindle sleeve and score the surface. When this happens, it is necessary to either build up the sleeve or renew the spindle. These spindles are small, but they are finished all over

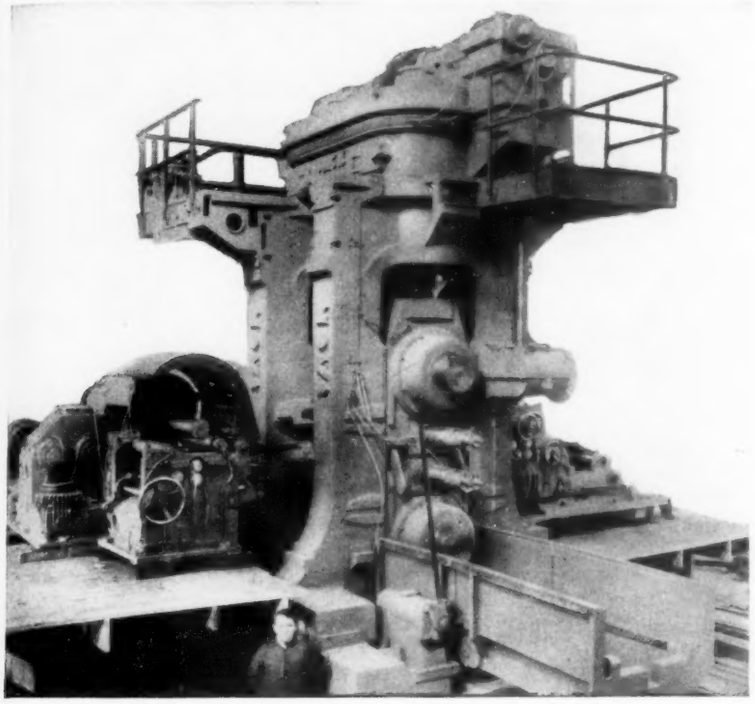
THE PIONEER ROLL NECK BEARING OF 1921

IS THE World Leader TODAY

SKF SELF-ALIGNING ROLLER BEARINGS DO THEIR JOB ON THE ROLL NECKS OF

1037
STANDS

MORE THAN TWICE AS MANY AS ANY OTHER ROLLER BEARING IN THE WORLD



15" x 36¼" x 32¼" 4 HIGH COLD MILL. Built by Maschinenfabrik Sack, Germany

Cold Mills

398 stands of reversible and continuous 4 high and cluster mills of all sizes.

233 stands of 2-and-3 high mills.

Hot Mills

182 stands of merchant bar and rod mills.

72 stands of continuous wire rod mills with delivery speeds up to 4500 feet per minute.

99 stands of looping and continuous strip mills with delivery speeds up to 3340 feet per minute.

53 stands of tube, piercing and reeling mills.

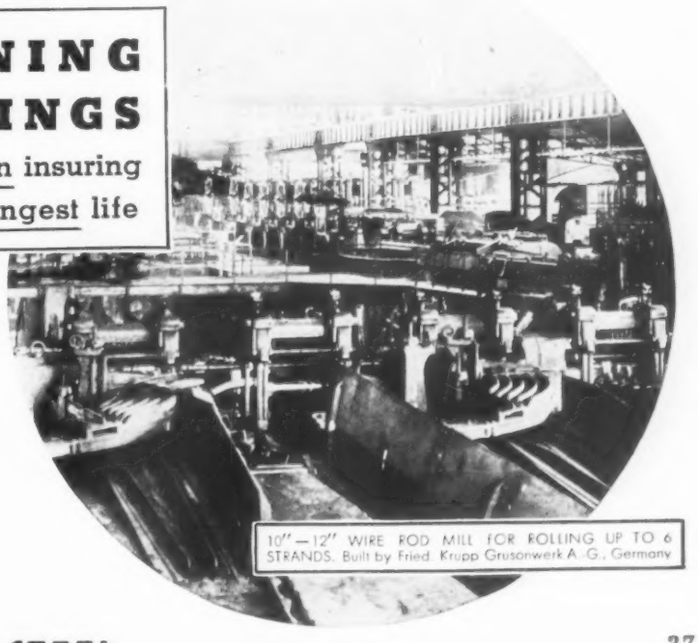
1037 total mill stands.

SKF INDUSTRIES, INC., PHILA., PA.

SKF SELF-ALIGNING ROLL NECK BEARINGS
provide an equalized load distribution insuring the full bearing capacity and the longest life

SKF
Roller Bearings

3274



10"—12" WIRE ROD MILL FOR ROLLING UP TO 6 STRANDS. Built by Fried. Krupp Grusonwerk A.-G., Germany

and ground and cost approximately $2.50 each. Through experimentation it was found that worn spindles could be reconditioned by spraying on high carbon steel, then regrinding and balancing them. Thus repaired, they can be returned to the users for an average price of $1.25 each. Several other methods have been tried to salvage the spindles, including welding and resleeving, however, the metal spraying process proved to be the most satisfactory from the standpoint of both service and cost.

\$ \$ \$

Special Tip Used on Torch To Remove Old Rivets

Frequently it is necessary to remove rivets from joints in structural steel. This is accomplished readily with an oxyacetylene torch equipped with a rivet cutting tip. The tip melts the button head of the rivet and then sets up a washing action which removes the molten metal and leaves the plate or beam unscored. Action of the tip is very rapid. When a small number of replacement rivets is to be driven, a cutting torch can easily be used as a rivet heater.

\$ \$ \$

Pump Rod Shows Long Life

A monel metal polished rod recently was removed from a pump in an Oklahoma oil well after 4½ years of service and was found to be good for many additional months of service. Carbon steel rods, previously used, were able to withstand the corrosive action encountered in this service for three months at the best.

\$ \$ \$

Suitable Steel for Nitriding

Only a few alloyed steels can be nitrided satisfactorily, but one of the best is a chromium-vanadium steel with 1.50 per cent chromium, 0.30 per cent carbon and 0.50 per cent vanadium. This steel can be nitrided at low temperatures and has good physical properties.

\$ \$ \$

Saws Heat Treated by Flame

A saw manufacturer is experimenting with the use of the oxyacetylene flame for heat treating high-speed hack saw blades. The process involves only the heating of the teeth and requires very close control of the flame.

\$ \$ \$

Domestic Heaters Welded

Welding has contributed heavily to the application of steel plate for boilers for domestic heating units. For these domestic units smaller pieces and sections naturally are required than for industrial units; the successful application of welding has made for economies on this smaller work of considerable importance. Manufacturers of steel plate boilers state that their business in the domestic oil burner field has expanded notably within the past three years, as a partial result of welding.

Develops Light-Weight Bridge Floor Slabs of I-Beam Construction

DEMAND for a light-weight, rugged, economical and highly efficient combination steel and concrete bridge roadway slab or heavy-duty floor has led the Carnegie Steel Co., Pittsburgh, to the production of a new type of armored construction. Known as I-Beam-Lok Armored slabs, the construction takes advantage of the well-known principle of the strength of the I-beam.

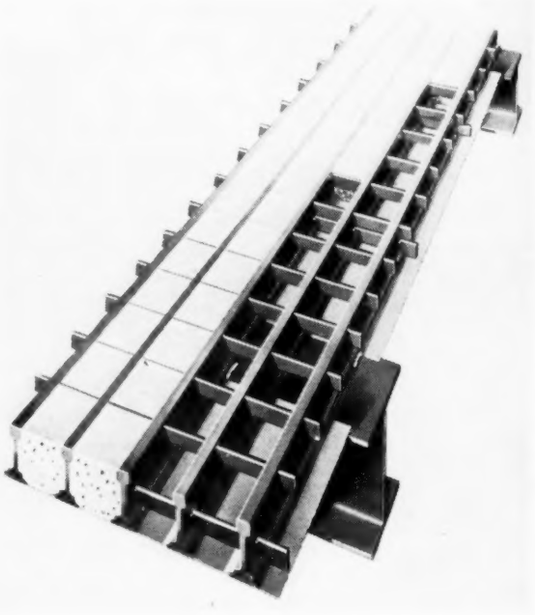
In addition to use on large bridges, the construction is applicable on many small beam and girder bridges, as well as on heavy-duty factory floors, garages, ramps, wharves, docks and similar structures. As shown in the accompanying illustration, the construction is a series of alternating I-beams and concrete ribs thoroughly tied and locked together by an adequate number of notched cross bars near both the top and bottom surfaces of the slab, providing sufficient reinforcement for lateral distribution of loads. The top bars form a part of the integrally armored surface.

Metal form strips, closely fitted between the lower flanges of the I-beams, provide a tight form work for the concrete. These strips are omitted over the top flanges of supporting beams or girders, permitting the concrete to come directly in contact with the bearing areas. The gap in the form strips over the supports, and the open space between the I-beams, facilitate the welding of the I-beams to stringer flanges.

Only the webs of the I-beams are punched or pierced for the insertion of the cross bars. Both the top and bottom flanges of the I-beams are intact throughout their entire length. The slab is so designed as to have constant moment of inertia for resisting both positive and negative bending moment stresses.

The notched cross bars are first inserted flat in the L-shaped web holes, then turned 90 degrees and tack welded in their final position. These bars hold and lock the I-beams rigidly at uniformly spaced intervals. At present, the armored units are available in two depths, namely, 3 inches and 3½ inches. When filled with ordinary concrete, the 3-inch thick slabs weigh 47 pounds per square foot and the 3½-inch slabs, 53.5 pounds. Steel required for the former is 15.5 pounds per square foot, and for the latter, 16.4 pounds.

Corrosion is minimized by using copper bearing steel of A.S.T.M. standard specification for bridges, A7-33T, containing a minimum of 0.2 per cent copper. The armored



THIS new type of armored bridge roadway slab takes advantage of the inherent strength of the I-beam. Cross bars pass through slots in the webs of the I-beams and are tack welded in position to make a rigid structure

WHICH Alloying Element *or Combinations* Will Best Meet Your Needs

CHROMIUM

MOLYBDENUM

MANGANESE

VANADIUM

ALUMINUM

TITANIUM

TUNGSTEN

SILICON

COPPER

NICKEL

■ With scores of alloy steels available, the selection of just the right combination for firebox, combustion chamber and throat sheets, boiler sheets, frames, rods, crossheads, guides, liners and bushings is not always an easy matter. To furnish practical and unbiased help in this selection is the purpose of Electromet Engineering Service.

For example, Electromet Engineers can tell you which alloy steel to use for locomotive boilers, to provide greater strength for higher operating pressures and to resist embrittlement at high temperatures. Electromet Engineers will help in selecting alloy steels which provide high strength and toughness with strong resistance to impact and fatigue for reciprocating parts.

This information is offered to users of alloy steels without charge and without favor of any one composition or producer. Take advantage of this service before writing your specifications.

Electromet
Ferro-Alloys & Metals

ELECTRO METALLURGICAL COMPANY

Unit of Union Carbide and Carbon Corporation

UCC

CARBIDE and CARBON BUILDING, 30 EAST 42nd STREET, NEW YORK, N. Y.

surface of rectangular blocks of concrete provides a smooth, hard, nonskid floor.

In introducing this new product, the Carnegie Steel Co. has issued a 24-page booklet which describes it fully and gives engineering specifications for its use.

Fireless Steam Locomotive of Geared Type Built for Switching Work

A FIRELESS steam locomotive of the geared type and provided with piston valves has been built for the New York navy yard by the H. K. Porter Co., Pittsburgh. Similar in principle of operation to the unit described in STEEL for May 14, p. 41, the locomotive has no firebox or boiler, in place of the latter carrying a tank containing water heated by steam supplied from a stationary boiler. The tank, specially lagged and jacketed to prevent loss of heat, is of the fusion welded type with a capacity of 600 cubic feet and is built for 200 pounds working pressure. As steam is used by the locomotive, the temperature of the water and pressure of the steam in the tank are reduced gradually and part of the water is vaporized. To insure dry steam, the tank is only four-fifths filled with water.

Drivers Are 41-Inch Diameter

Weight of the locomotive is 103,000 pounds. It has two cylinders with 16-inch bore and 16-inch stroke; the four drivers are of 41-inch diameter. Normal drawbar pull is 18,000 pounds, maximum 26,000 pounds. Jackshaft is driven through a single gear reduction, which in turn drives the four wheels through cranks and side rods. Gears are of alloy steel, carefully machined and hardened. Gear shafts are mounted in an oil-tight cast steel housing on tapered roller bearings supplied by the Timken Roller Bearing Co., Canton, O. Bearings on the jackshaft have an outside diameter of 14½ inches, giving some idea of the size of the gear drive. Driving wheel axles also are mounted on tapered roller bearings, running in oil-tight cast steel journal boxes.

The builder claims many advantages for this type of locomotive for industrial switching work: Steam in stationary boilers can be generated at less cost than in locomotive boilers; danger of explosions is avoided; excessive pressures are not possible; no fuel is burned, thus eliminating fire hazard and smoke and concentrating the engineer's attention upon operation; no waste of steam through pop valves; no boiler washing required; no provision necessary for storing and handling fuel and water, or removal of ashes. With normal loads the locomotive can operate all day on two charges of steam.

With maximum drawbar pull of 26,000 pounds, this geared fireless steam locomotive will operate all day on two charges of steam from a stationary boiler

Cast Iron Blocks Prolong Road Surface Life in Europe

(*Concluded from Page* 33)

the wheel always rolls in the same track around a curve, the wear on the pavement is severe.

In one test, a pavement of stone blocks was entirely worn out after 750 revolutions of the wheel around the course, but the cast iron blocks showed no wear after 30,000 revolutions. Although France has actually laid less cast iron pavement than England, the French authorities are giving this type of pavement careful consideration with special reference to the most efficient and economical design for each particular type of service.

In view of the fact that such satisfactory reports have been received on the use of cast iron for paving purposes, it would seem that some experimental sections of roads should be tested under the traffic and climatic conditions of this country. Cast iron block surfacing is used largely in cities where traffic conditions are most severe, but for general highway work the open-grid foundation type, surfaced with mastic or concrete, should be given consideration. In England the cast iron sections used in these pavements cost about $30 per ton. In some localities in the United States these sections could be manufactured at two-thirds of this cost. At Birmingham, Ala., for example, the price of pig iron is normally about $14 per ton and on a quantity production basis it might be possible to cast these blocks directly from the hot metal from the blast furnace or hot metal mixer.

Cost Set at $3.32 Per Square Yard

Pig iron can be made at Duluth or other points on the Great Lakes for about $16 per gross ton. Allowing $4 per ton for casting the shapes required for paving purposes gives a cost of $20 per gross ton, or $18 per net ton. One net ton of cast iron surfacing blocks will cover about 8½ yards of pavement, making the cost of the paved surface $2.12 per square yard. Adding to this 50 cents for freight and delivery charges, 30 cents for the asphaltic filler, and 40 cents for labor, gives a total cost of $3.32 per square yard of paved surface. With brick surfacing in Minneapolis costing $2.50 per square yard, it is seen that the cast iron block surfacing will cost about one-third more than brick surfacing. If the claims made by the foreign manufacturers and highway engineers are correct, iron blocks are worth the difference in cost.

For the cast iron foundation type of pavement, in which the grids or plates weigh about 13 pounds per square foot, one ton of castings will cover 17 square yards of pavement. This gives a cost ready for the bitulithic or asphalt surfacing of about $1.50 per square yard, which is a little less than the cost of a concrete pavement before the asphalt surfacing has been applied. The durability of this type of pavement is not so definitely known since it has not been in use for as long a time as the cast iron block type. For general highway work, however, it seems to compete in cost at least with the pavements now in general use.

TWO *Important* ADVANTAGES OF REPUBLIC'S *Improved* 3100 STEELS

Although melted to the same analysis range as the conventional S. A. E. 3100 series, Republic's Improved S. A. E. 3100 Steels respond much more uniformly to heat treatment. Likewise, they have excellent hardening characteristics — all heats are tested to insure proper hardenability. • Fine grained . . . free from the undesirable properties which characterize certain ferritic steels . . . made to new standards of metallurgical control, Republic's Improved Series of S. A. E. 3100 Steels offer appreciable economies in many applications for which higher priced alloy compositions are now being used. Data on request.

CENTRAL ALLOY DIVISION . . MASSILLON, OHIO

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

ACATHON STEELS

Foundrymen's Association Announces Program for International Congress

DEVELOPMENTS and progress in the castings industry throughout the world will be the theme of the Fifth International Foundry congress to be held at Convention Hall, Philadelphia, Oct. 22-26, in conjunction with the thirty-eighth annual convention and exposition of the American Foundrymen's association.

Modern developments will be presented from three angles: Advances in technical knowledge, progress in operating practice, and latest design and improvements in foundry equipment. The holding of all convention activities under one roof will make close co-ordination between different interests.

The program of papers, discussions, informal meetings and exhibition of equipment will provide information on many phases of foundry work. An unusual number of papers will be contributed by foundry groups in foreign countries, including Australia, Belgium, Czechoslovakia, England, France, Germany, and Italy.

Special Sessions Featured

A general session on materials handling will be of interest to all foundrymen. Special attention will be given to problems of foundry maintenance and the selection of foundry equipment as an investment. Refractories will be the subject of a second general interest session. Among papers to be presented will be a discussion of the relation between slags and refractory linings, a resume of modern crucible melting equipment, and a study of the properties of clays obtained from different sources.

The shop operation course on sand control, which has been one of the most popular and instructive of former conventions, will be repeated this year. A session also will be held on sand control and research. Apprentice training will be taken up at another session.

Two sessions, a roundtable luncheon, a shop operation course on cupola practice, and a joint A. F. A.-A. S. T. M. meeting on cast iron tests and specifications are planned. German and French exchange papers will deal with high-test cast iron as made in those countries; the Italian paper with the chemical composition of common cast iron for boilers; and the Belgian paper is expected to give data on gray iron collected under auspices of the Belgian Research foundation. Papers on high-chromium cast iron and data on fatigue tests of high-strength iron will be read at the A. F. A.-A. S. T. M. meeting.

A general session on steel, another on porosity of steel castings, and a roundtable luncheon are planned for steel founders. The paper of the Institute of British Foundrymen will discuss steel casting. Problems of solidification and contraction, and a study of controlled directional solidification, will be discussed at the general steel castings session.

The effect of copper in malleable iron, especially its influence on the annealing time, will be reported at the malleable session. The report of the committee on nomenclature, giving recommendations for names of different products made in malleable foundries, will be another feature of this session.

The tentative program as announced by the American Foundrymen's association is as follows:

Monday, Oct. 22

MORNING

Registration and committee meetings.

AFTERNOON

Formal opening of exposition.
Shop operation courses.

EVENING

Annual alumni dinner.

Tuesday, Oct. 23

MORNING

Formal opening meeting.

AFTERNOON

General steel session.
General nonferrous session.
Apprentice training session.
Shop operation courses.

EVENING

Reception to overseas guests.

Wednesday, Oct. 24

MORNING

Steel session—symposium on porosity.
Refractories session.
Cast iron session.

NOON

Nonferrous roundtable luncheon.
Steel roundtable luncheon.

AFTERNOON

Refractories session.
Shop operation courses.

Thursday, Oct. 25

MORNING

Cast iron session.
Malleable cast iron session.
Materials handling and foundry equipment session.

NOON

Cast iron roundtable luncheon.
Malleable cast iron roundtable luncheon.

AFTERNOON

Special lecture and medal awards.
Annual business meeting.
Shop operation courses.

EVENING

Annual banquet.

Friday, Oct. 26

MORNING

Cast iron session—joint A. F. A.-A. S. T. M.
Sand control and research session.

AFTERNOON

Special plant visit.

Steel Frame Structures in Poland Adopt Welding

Development of steel-framed structures in Poland has been along two distinct lines: The construction of tall and medum-sized buildings; and of small and standardized units. In the former the use of steel as a building material has presented the advantages of high endurance and the possibility of speedy erection at any season of the year. Further economies have been made possible by the introduction of welded construction. In the second class of structures, conditions in Poland are not favorable as yet to the development on a large scale of small steel house building.

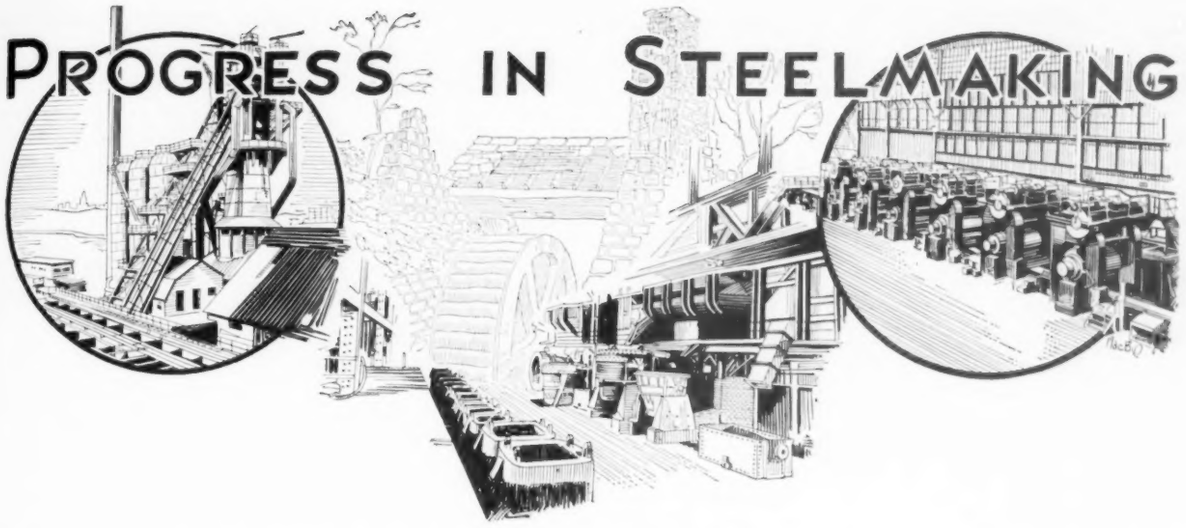
These observations were made in a paper by Stefan Bryla, Polish engineer, in a paper presented at the International Congress for Steel Development in London, England, recently. Mr. Bryla pointed out that in the first tall steel-framed Polish building, the treasury house at Katowice, begun in 1930, the construction of a 14-story section was done mainly by riveting, although welding also was applied, and a 6-story section was built entirely by welding.

A later structure, begun in 1932, was 16 floors in height and was built by a combination of welding in the shop and riveting on the site. A list of a number of other tall buildings erected in recent years is given, showing economies of from 10 to 20 per cent effected by the use of welding or combination of riveting and welding over all-riveted design.

South Africa Buying More Industrial Machinery

Attributable mainly to increase in gold-mining activity, a 19 per cent gain in industrial machinery imports was registered for 1933 in the Union of South Africa, according to advices from the bureau of foreign and domestic commerce, Washington. Imports of 30 classes of machinery for the year were valued at £2,889,909. Although the United Kingdom was the principal supplier of this machinery, a number of American manufacturers are contributing to this volume of trade, some from their branch plants in England. About 16 per cent of the total was supplied by manufacturers in the United States.

PROGRESS IN STEEL-MAKING



IMPROVED features are incorporated in a new type machine for grinding alloy and carbon steel sheets. Abrasive belts are employed as cutting elements. The roll feed type is for rough grinding where one pass beneath the abrasive is sufficient to clean the surface. A reciprocating table type unit is designed for finer finishes. Thin sheets, resting on the curved surface of the table, are flexed so that buckles are evened out and a flat cross section is presented to the grinding belt. Because of a short contact at the cutting point, the cut of each grain is shortened, thus breaking up the cuts and preventing long scratches in the work being polished. The units handle sheets up to 48 inches wide and in any length.

• • •

Fabric roll neck bearings of close structure are responsible for reducing the light power input on a 10-inch rod mill finishing stand 60 per cent and the input with steel in the rolls 44 per cent compared with metallic bearings.

• • •

Cleaner surfaced ingots are secured by washing the molds with water to extract the dirt from the fire cracks before applying the tar coating. This procedure also keeps the tar bath clean.

• • •

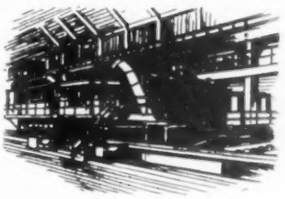
Experiments recently conducted on a new heat insulation indicate the medium will stand a temperature of 1500 degrees Fahr. and that it should be highly efficient for electric ovens and furnaces. The material is composed of a fine network of purest sand, interlocked with air and is extremely light in weight. The most powerful microscope is unable to reveal its texture. The insulating power of the new material is estimated at 10 per cent greater than that of still air, and from 50 to 100 per cent greater than many other materials employed for this purpose.

• • •

What is claimed to be the fastest plate mill shear in Germany recently was completed. The machine is designed to cut plates 1½ inches thick, up to 62 inches wide at a speed of 7¾ inches per second.

• • •

By promoting fast heating of slabs, billets, bars and other semi-finished commodities at a fairly uniform temperature throughout, skids of alloy quality permit the use of a short, hot hearth and reduce the fuel consumption. Wear-resisting qualities eliminate shutdowns and prevent pickup of foreign materials from the bottom of billets passing through the furnace.. Alloy skids contain high amounts of nickel and chromium.



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Useful data applying to blast furnace linings are obtained by inserting thermocouples in the brickwork at different planes in the furnace. The practice at two plants in England is to use three or four thermocouples located at equidistant points around the furnace at three or four different levels, and inserted into the brickwork to the same depth in each case. In addition to the indications given by the thermocouples of the condition of the lining, they also disclose whether the furnace is working uniformly. Thermocouples on one side will give higher readings than those on the opposite side of the stack when the furnace is working unevenly.

• • •

Protection against leakage is afforded by a newly developed sealing compound which is nonsoluble, noncorrosive and nonoxidizing. When used with or without gaskets, or as a seal for flanged joints in fuel, oil, steam, water, air, lubricating oil, or pipe lines, the seal cannot be washed out. It is not affected by atmospheric conditions, is heat resisting up to 400 degrees Fahr., prevents rust or corrosion and can be applied to any material or surface. The product comes in paste form, seals instantly and yet permits ready disassembly at any time.

• • •

An ingenious device has been applied to a 4-high, reversing, strip mill to permit the mill to roll as close as possible to each end of the strip, but without causing the strip to become detached from the reels. This is accomplished by connecting a selsyn transmitter and a selsyn receiver to each of the two reels. The selsyn on the winding reel is connected electrically to a counting device mounted on the operator's control desk. As the strip is wound the counter indicates the number of revolutions made by the reel; when the mill is reversed, the counter also reverses and when the counter reading approaches zero, the operator knows that he is reaching the end of the strip and again must stop and reverse before the strip is pulled from the reel.

LEADING PRODUCTS OF BETHLEHEM

Bars, Bands and Special Sections

Carbon steel bars and bands, Bessemer and open-hearth; special and automotive sections of every description; iron bars, double refined; staybolt and engine bolt quality.

Semi-Finished Steel

Carbon billets and slabs, rerolling and forging quality; sheet bars and skelp.

Alloy Steels

Open-hearth and electric-furnace alloy steels for all purposes, hot-rolled and cold-drawn, rough-turned or ground; MAYARI nickel-chromium steels; MAYARI engine bolt and staybolt steels; RESILIA spring steel; SUPERTEMP, for superior physical properties at high temperatures. Bars, bands, billets and blooms.

Bolts and Nuts — Rivets — Spikes
Pole Line Material

Plain and galvanized bolts; machine, carriage, and special; heat-treated, carbon and alloy; MAYARI steel frog, track and fitting-up bolts; DARDELET self-locking threaded bolts and nuts; staybolts, solid and hollow; hot-forged and cold-punched nuts.

Pig Iron

Basic, Bessemer, foundry, low phosphorous, malleable, malleable Bessemer; MAYARI pig iron for making superior alloy iron castings.

Forgings

Carbon and alloy; hammered and hydraulically pressed; drop and upsetter; seamless vessels for oil refineries; high-pressure seamless boiler drums and chemical vessels.

Castings

Carbon and alloy steel (open-hearth and electric), manganese steel, iron, brass and bronze, rough as cast or machined; abrasion-resisting castings. Centrifugal cast bronze sleeves and liners; ingot moulds.

Wheels and Axles

Wrought steel wheels and axles for freight and passenger cars and engine, tender, and trailer trucks; for electric cars; for mine locomotives and mine cars; for cinder, ore and other industrial cars; crane wheels.

Rolled Steel Blanks

For gears, pinions, and flywheels. Tire moulds and mould rings, shaft couplings, brake wheels and drums, and other circular forgings.

Trackwork
for Steam, Electric, Mine and Industrial Railways

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Butt-welded and lap-welded pipe, black and galvanized; copper-bearing pipe.

Boiler Tubes

Genuine old-fashioned knobbled charcoal iron tubes; double-pass steel tubes. Double-pass copper-bearing steel tubes.

Steel Sheets

Hot-rolled, hot-rolled annealed, cold-rolled, heavy cold-rolled sheets; furniture, heavy furniture, automobile sheets; tack plate; galvanized, flat and formed sheets; painted formed sheets; special-finish sheets. Sheets of BETH-CU-LOY (copper-bearing steel).

Tool Steels

Bethlehem special high-speed steel; carbon and alloy tool steels; cobalt magnet steel; hot-work tool steels; die steels; valve steels; rivet set and pneumatic chisel steels; special tool steels; tool steel billets, of all grades. Rock and mine drill steels, hollow and solid.

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Coke tin plate; black plates; galvanizing, enameling and lithographing stock.

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Wire and Wire Products

Plain, bolt, screw, chain, extra-soft rivet and hard bright nail wire; bright processed, annealed, normalized heading and telephone wire; galvanized wire; wire rods; BETHANIZED (special zinc-coated) wire; clothes-line wire; soft-processed wire; stapling wire; border wire; APEX and INVINCIBLE spring wire; barbed wire; SILVER STAR bale ties. BETHLEHEM (CAMBRIA) field and poultry fence. Nails.

Steel Fence Posts

Posts for farm fencing; snow fence posts; highway sign posts.

Structural Shapes

Bethlehem wide-flange beams, girders, and H-columns; joists and stanchions; standard beams, channels and angles; car and shipbuilding shapes; standard and special T- and Z-bars.

Steel Plates

Universal and sheared plates, for all purposes; slabs.

Flanged Products

Tank heads, boiler heads, dome sheets, manheads, yokes, bolts and saddles; miscellaneous flanged plate work.

Concrete Reinforcing Bars

Bethlehem deformed bars of constant section, in standard rounds and squares.

Steel Sheet Piling

Bethlehem steel sheet piling for temporary work, as in cofferdams, and permanent work, as in retaining walls, cut-off walls, and jetties.

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Annealing Malleable in Small Furnace Proves Economical

BY L. J. WISE
Chicago Malleable Castings Co.

SINCE the popular tendency of the day seems to be to discard many established and formerly placidly accepted practices, the changes in the malleable iron annealing process can be said to be decidedly in tune with the times.

Going back to 1923, the author, at that time connected with one of the largest producers of malleable castings in the country, recalls the large sluggish annealing ovens with their 18 to 27-inch sidewalls and massive crowns and built-in fire-boxes, with approximately the following annealing cycle:

	Hours
Time to reach soaking temperature	60
Held at soaking temperature	72
Cooling to 1200 degrees Fahr. (8 degrees per hour)	50
Cooling to handling temperature	24
Total	206

Obviously this meant that the user of malleable castings had to anticipate his requirements considerably in advance of his needs and there was no way by which the foundry could help the customer out of a jam when castings were needed in a great hurry.

This condition was quite a handicap to the sale of malleable castings and resulted in many parts being made of other materials, where malleable would have been the logical and most economical material to use, barring the time element.

During the next five years the tonnage of malleable produced increased simultaneously with the phenomenal growth of the automotive industry. Many plants built more and bigger annealing ovens, the theory being that the larger the tonnage annealed per oven, the lower was the cost of annealing. Increasing the size of the ovens, obviously, did not tend to reduce the annealing time. Several installations of continuous ovens were made, where production was sufficient to warrant it. However, even here, the prime factor was cost reduction, although there was a substantial reduction in time. During that era improved methods of firing were adopted widely, principally pulverized coal and oil. Here again the prime motive, as in the case of the continuous kiln, was cost reduction.

Shortly before the depression set in, the industry was shaken up considerably by the revelation that the annealing time could be reduced 50 per cent or more by the use of electric heat-treating furnaces, accurately controlled and taking advantage of recently developed theory that it was not necessary to cool at an extremely slow rate between the upper temperature and the critical range of 1400-1300 degrees Fahr. However, like anything new, this process was not accepted readily by the industry as a whole for a number of reasons, chiefly the cost of electricity.

The depression brought the period of hand to mouth buying. Foundries which formerly loaded one of their big ovens every day were putting their entire week's production into one oven and the vicious circle of dissatisfaction started. Buyers could not release orders until the castings were actually needed and the foundry could not run a heat until it had accumulated sufficient orders. Buyers were forced to seek other sources of supply or use other materials if in any way possible.

Old Ideas Are Discarded

To meet these conditions the malleable foundryman was forced to throw precedent out the window and start annealing in smaller batches. The obvious answer was to run the big ovens one-half or one-third full. This was in many cases very costly from the standpoint of fuel because of the tremendous absorption of heat units by the refractories.

These conditions brought about the advent of the small oven, designed to anneal 5 to 10 tons of castings economically and rapidly. Probably when many started to build the first small oven, it was done with a sigh of resignation, anticipating that something was being adopted which would increase the cost of production with no chance of getting it back in selling price.

Actually, after nearly 2 years of experience with two 10-ton ovens, the author is convinced that annealing can be done in such quantities just as economically as in the old style ovens, with nearly a 50 per cent saving in time, with greatly increased flexibility of operating the annealing department and with immeasurably improved service to the customer.

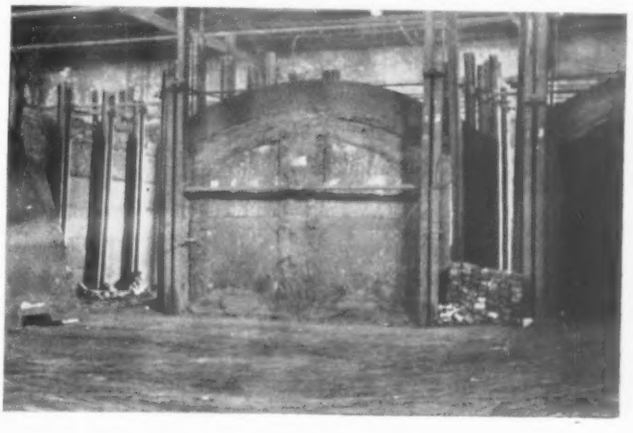
Inefficiencies Eliminated

Contrary to many opinions, particularly on the part of the users of malleable castings, this is not due to any radical changes in metallurgical theories or to any mysterious developments in metal mixtures. The developments are rather the result of a realization and study of methods of eliminating the mechanical inefficiencies present in the old style ovens.

Development of a satisfactory refractory insulating brick at a fairly reasonable cost called attention to the great number of heat units which were being absorbed by the fireclay brick and the possibility of eliminating this waste.

This development, coincidental with the demand for small batch annealing, resulted in the design of a 10-ton oven to hold 12 stacks of pots. The walls were built of 9-inch refractory insulating brick backed up by 3½ inches of secondary insulation. The crown was 9-inch firebrick covered with 4 inches of secondary insulation. Generous space between stacks and from top of stacks to crown was allowed to permit free circulation and uniform heating.

Provision was made for the subsequent installation of a car bottom to permit emptying and refilling of the oven at temperatures much higher than is possible when unloading by lift truck, but this has not been installed as yet. The fuel is



PROVISION has been made for the subsequent installation of a car bottom in the small malleable annealing furnace

oil. An average cycle in use today is as follows:

	Hours
Time to reach soaking temperature 1650 degrees Fahr	24
Held at soaking temperature 1650-1700 degrees Fahr.	24
Cooling to 1300-1350 degrees Fahr.	18
Held at 1300-1350 degrees Fahr.	12
Cooling to handling temperature	18
Total	96

Packing material is used in all pots. Evidence of under annealing is extremely rare. Fuel oil consumption averages the same per ton of castings annealed as in the old style 25 ton ovens. Further savings in time and fuel are available upon the installation of the car bottom. Still further reductions are possible with castings which lend themselves to annealing without packing material.

It is the author's opinion that the future will see the gradual elimination of the large size annealing ovens in favor of more and smaller units wherein the annealing will be conducted with somewhat the same precision as case hardening or other well controlled heat treating operations.

Felt Bonded Metal Tested For Many Applications

A felt bonded metal, offered jointly by the H. H. Robertson Co., Grant building, Pittsburgh, and the Felters Co. Inc., 99 Bedford street, Boston, is now undegoing tests to determine its adaptability for a wide range of industrial applications. This material, previously described in STEEL, March 21, 1932, page 35, and July 10, 1933, page 33, is produced by a process whereby felt is brought into permanent contact with sheet metal in such a way that an actual metal bond is formed and the felt cannot pull loose.

Bond Holds Permanently

In the process, a metal coating is fused between the layer of felt and the metal so that the fibers of the felt are imbedded in the metal coating. A bond is thereby made, which, it is said, will not separate under heat, cold, moisture, fumes; or mechanical friction, strain, or distortion.

The applications of felt may be to one or both sides of the metal. Thickness of the felt may be varied to suit requirements, as can also the weight of the sheet metal. After the felt is applied, the metal can be bent or shaped without breaking the felt contact.

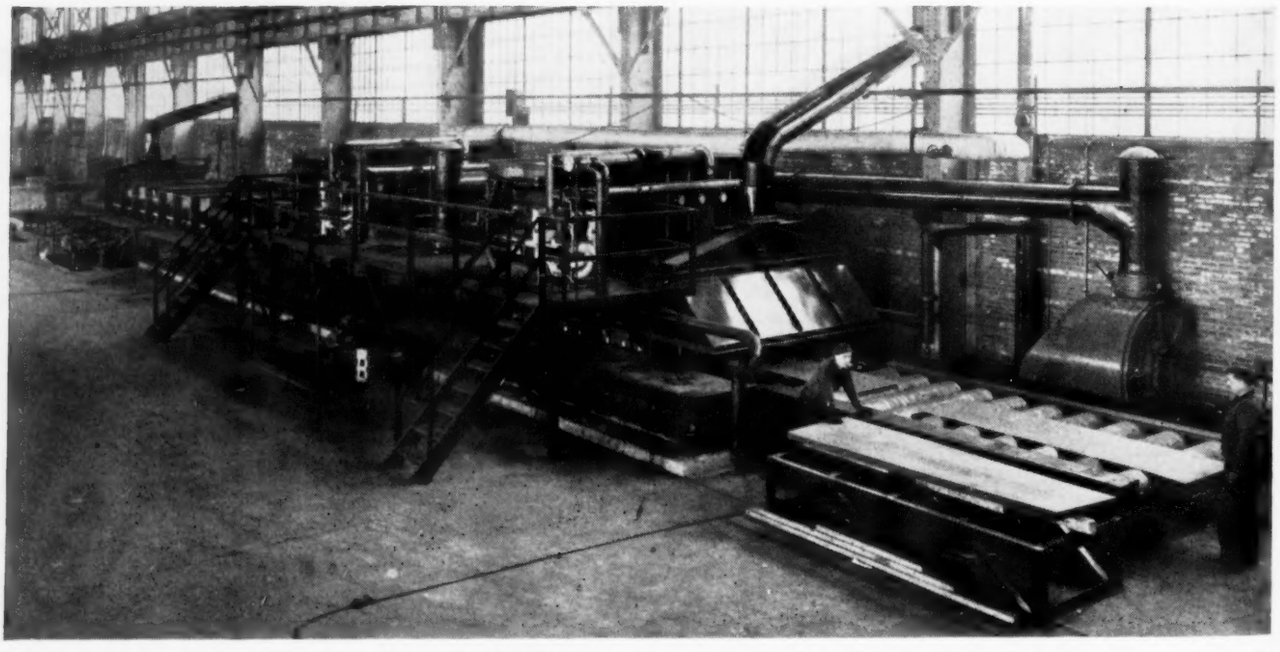
Uses for the material appear to be extensive. It is now undergoing tests in several research laboratories for air conditioning equipment. The felt lining provides sound deadening and also provides felt to metal contact at all joints, thereby eliminating both leakage and vibration noises. Experimental work is being done on the material in connection with the building of automobile bodies, air plane fusilages, metal shanks for shoes, bases for telephone instruments, office appliances and precision instruments.

All properties of felt, which is recognized as a durable and satisfactory material for sound deadening, vibration, heat and cold insulation, and the like, are retained in the process. Felt bonded metal may be finished with bakelite, lacquer, or with plywood.

British Machine Tool Plants Report Good Business

The machine tool industry of the Birmingham, England, consular district has shown much improvement in all directions during the past few months, according to George A. Makinson, American consul, in a report to the bureau of foreign and domestic commerce, Washington. While this improvement follows largely upon a resurgence of activity in the principal engineering trades, one of the chief reasons is claimed to be the almost complete absorption of the used tool market.

Practically all machine tool builders in the Birmingham district are busy, in many instances overtime and night work being necessary to cope with orders. Some plant extensions are reported. Present demand is stated to be chiefly for all classes of screw machines and thread forming tools. Small tool equipment firms also are busy.



SHEETMAKER WILL INSTALL CONTINUOUS NORMALIZER: Surface Combustion Corp., Toledo, O., has contracted with the Granite City Steel Co., Granite City, Ill., for the installation of a continuous furnace to normalize and blue anneal steel sheets. The furnace, which will be similar to the unit shown in the illustration, will have a conveyor of the internal-bearing, roller-bottom type. A special feature will be the drive which will permit high-speed travel through the cooling zone irrespective of the rate of travel through the heating zone. This is desirable in controlling the temperature at which blue annealed material is roller leveled. Heavy fuel oil will be used for heating through the Surface Combustion Corp.'s oil gasification system whereby the furnace actually becomes gas fired

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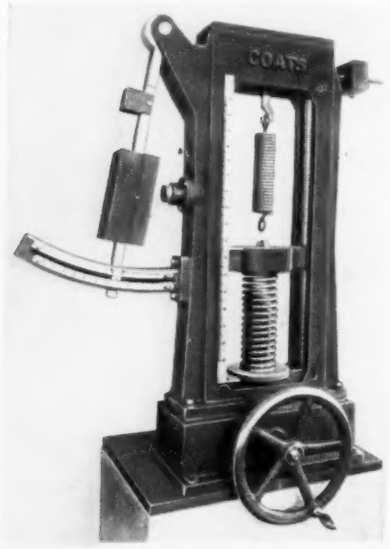
NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

Spring Testing Machine—Coats Machine Tool Co. Inc., 110-112 West Fortieth street, New York, is placing on the market a pendulum indicating spring testing machine for heavy springs. The unit, designated type DN, is shown herewith. Drive is by means of two screws operated by a handwheel. When the screws rotate, the crosshead travels up or down. This crosshead is guided within the frame of the machine and is bored to admit arbors or pilots up to 4½ inches in diameter for the support of long compression springs. For testing extension springs, a tension hook is provided which may be screwed into the crosshead.

The lower compression plate is



Coats DN type Elasticometer spring testing machine

guided on either side in steel balls to counteract the forces which become operative at right angles to the axis of a compression spring under load, and which might otherwise have a tendency to interfere with the free play of the scale beam.

♦ ♦ ♦

Helmet—American Optical Co., Southbridge, Mass., recently developed a helmet designated No. 660. Shown in the accompanying illustration, it is made of tough fiber to withstand the blows of flying particles, yet is light in weight and does not tire the worker. The headgear is adjustable and the helmet can be set easily and quickly in either an "on" or "off" position. Large, clear lights of laminated safety glass provide wide angle vision and dependable eye protection. This helmet is de-

American Optical Co. helmet protects face and eyes from injury

signed for men who pour babbitt or other molten metal which might splash, workers in chemical plants or laboratories where acids or caustics under pressure exist, operators of machine tools exposed to large flying particles from brittle metals, men employed on galvanizing tanks and for men working on many other jobs of a similar nature.

♦ ♦ ♦

Seam Welders — Taylor-Winfield Corp., Warren, O., has added to its line of standard and special welding units a complete new group of seam welders. The "SW-100" series universal type air-operated seam welders, shown in the accompanying illustration, incorporate many novel mechanical and electrical features which provide a wider operating range and greater flexibility.

This machine is arranged so that the rolls can be turned either to the right or left of the knee for longitudinal as well as cross welding. The upper roll is driven positively through spiral gears from a gear reduction unit at the rear of the machine, connected to the motor by a vari-speed drive unit giving a welding speed range of from 45 to 130 inches per minute.

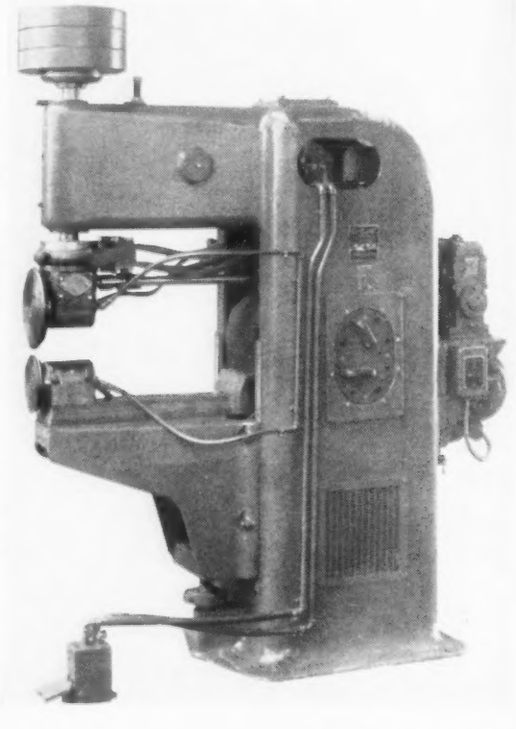
Pressure on the upper roll may be supplied by weights mounted directly on the head spindle, by the same air cylinder that lifts the head, or a combination of the two. An adjustable stop limits the opening of the upper head, permitting a vertical adjustment of from ¼ to 2 inches. The lower roll support has a vertical adjustment of 4 inches to provide for wear on the welding rolls.

The head is raised and lowered by means of an air cylinder controlled by a four-way foot-operated valve. Pressure switch automatically controls the current in such a manner that the current cannot be on before pressure is built up on the rolls; also the current is cut off before the pressure is released. Current interruption may be provided through synchronous driven interrupter or thyratron control unit.

♦ ♦ ♦

Flexible Tooth Gear—Roots-Connersville Blower Corp., Connersville,

AIR-OPERATED seam welder developed by Taylor-Winfield Corp. Current is carried to the revolving spindles from the spindle bearing by a new construction, eliminating freezing yet providing maximum conductivity and assuring smooth running bearings without undue play. A pancake type transformer of 100-KVA capacity, with water-cooled secondaries, is mounted inside the fabricated steel frame of the welder. Heat regulation is provided through an auto-coil also mounted in the frame, with leads extending to a 16-step regulator, giving a close adjustment of welding heats



Ind., has developed a flexible tooth gear, which is used on the larger sizes of its line of blowers and gas pumps. These gears, having epicycloidal addendums, with radial flanks, are designed to have at least three teeth in working contact at all times. The individual tooth is designed to flex a fraction of a thousandth of an inch at the time when it comes into initial contact with its mating tooth, and is said to allow the pressure to be distributed among the three pairs of teeth which theoretically are under load. The feature claimed for this design is that it results in the maintenance of a better oil film and practically eliminates shock forces and acceleration forces.

The gears shown in the accompanying illustration are 36-inch pitch diameter, 16-inch face, and designed to transmit 1000 boiler horsepower at a speed of 360 revolutions per minute, or a pitch line velocity of about 3400 feet per minute. The cast iron mixture used in the gears contains 40 per cent steel, 1 per

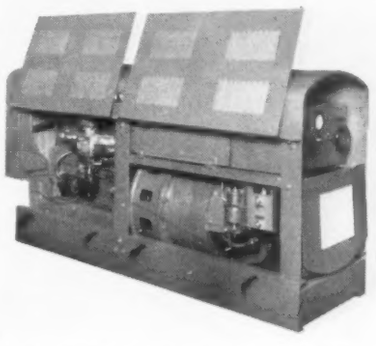
Flexible tooth gears developed by Roots-Connersville Blower Corp.

cent chromium and 2 per cent nickel. The metal shows a tensile strength of 42,100 pounds per square inch with a standard arbitration bar.

• • •

Gas Engine Driven Welder—Lincoln Electric Co., Cleveland, has developed a close coupled gas engine driven "Shield-Arc" welder of 300 ampere, 40 volt capacity. Due to the close coupling feature, the new unit, shown herewith, is much more compact and of lighter weight than previous models. The generator is mounted on the engine housing with the drive lined up on hardened steel and driven on cushioned rubber. This method of coupling takes care of any misalignment and reduces vibration.

A special idling device cuts the



New Lincoln close coupled gas engine driven "Shield-Arc" welder

engine speed when the arc is broken. The welder is supplied mounted on a rigid steel base with totally enclosed steel side curtains. Where desired the comlete unit is mounted on small factory portable steel wheels, or large 6-inch face steel wheels for outside use or on two or four wheel pneumatic tired trailers. A uniform generator current permits use of a higher average current with greatly increased welding speed.

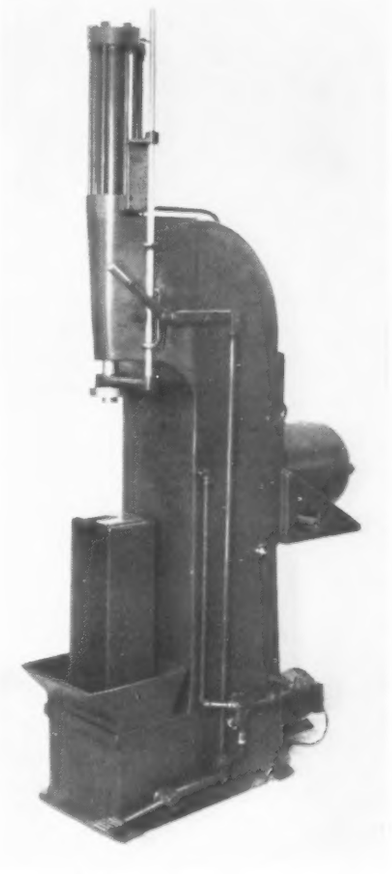
Other features of the welder include dual control of welding heat, sparkless commutation, handy-height controls, and arc welded steel construction. Lincontrol, a new remote current control device which enables the operator to adjust the current by merely tapping the electrode on the work, is supplied as optional equipment.

• • •

Broaching Press—Fox Machine Co., Jackson, Mich., recently introduced a 3-ton broaching press. Frame of the unit, shown herewith, is of one-piece construction. The base serves as a reservoir for cutting compound and the column serves as a reservoir for the oil. A hydraulic feed pump is used and is mounted on a bracket in a unit with its driving motor so that after disconnecting the delivery pipe line from the pump through a hand hole provided for that purpose at the back of the column, the bracket carrying the motor and the pump and its suction line can be lifted free from the machine frame. In a like manner the cutting compound pump with its driving motor are mounted on a bracket which can be removed from the lower part of the frame as a unit.

Control valve is located in a recess at the back of the frame in such a way that all piping is contained within the confines of the frame. In case any leaks might develop at pipe joints, the oil drains back to the oil reservoir after having first passed through a suitable filter. The pan and the table at the front are separate pieces. The pan serves to collect compound from the work and return it to reservoir in the base. The table can be replaced with other tables of different heights so as to accommodate a variety of work. Nose of the ram carries an arm which in turn supports a vertical rod on which are located two stops. One of these stops determines the depth of the stroke and the other stop determines the distance to which the ram returns on its upstroke.

When the operator steps on the pedal or pulls down the hand lever, the control valve is latched in position to provide down movement for the ram and the operator does not



Three-ton broaching press recently developed by Fox Machine Co.

need to keep his foot on the pedal or hold his hand on the lever during the working stroke. As soon as the desired depth has been obtained, the ram will automatically return. At any time during the down stroke, the operator can push the hand lever up and produce the up movement of the ram. When the ram reaches its upper set position, the pump delivery

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Tin Mill Black Plate All Finishes
Lacquered and Coated Black Plate
Copper Bearing Terne Plate
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Strip Steel Sheets
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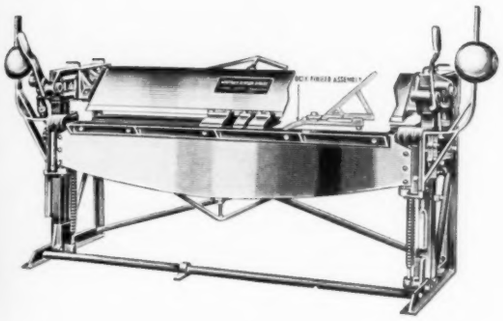


BENDING brake built by Whitney Metal Tool Co. can be employed for common bending as well as for pan or box bending. The manufacturer declares that it has 17 outstanding improvements and that nearly any shape piece of work can be made on it

is by-passed so as not to be working against pressure. Flow of compound to the broach occurs only when the ram is moving in a downward direction. As soon as the ram reverses, the flow is automatically cut off.

♦ ♦ ♦

Bending Brake—Whitney Metal Tool Co., Rockford, Ill., has placed on the market a new bending brake. This unit, shown above, has a dual feature; it can be used for common bending as well as for pan or box bending. Nearly any shape piece of work can be accomplished on the brake as the upper bending rail can be moved 6 inches away from the bending apron, and at the same time the machine can be so arranged as to allow a 4-inch open space between the upper bending rail and the lower clamping rail. Because it has 17 outstanding improvements and due to its universal features a large variety of work can be accomplished on it. This new machine will be known as the Whitney-Jensen brake.

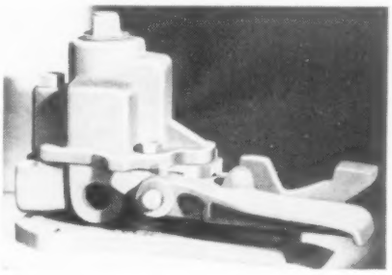
♦ ♦ ♦

Brake—Walker-Turner Co. Inc., Plainfield, N. J., is incorporating a new brake in its Driver clutch. The mechanism is simple and positive in action and operates automatically with the clutch control. Friction elements are molded asbestos and cast iron, while a frictional area of exceptional size is obtained through the use of a simplified form of double cone. Many parts of the clutch such as the clutch shell, are of zinc die castings.

♦ ♦ ♦

Foot-Operated Valve—Hanna Engineering Works, Chicago, is introducing a new spool type foot-operated valve, shown herewith. It is suited for actuation automatically by the cylinder unit it controls and also is adaptable for solenoid or other types of remote control. The principal moving part is a spool or piston which is fluid balanced in all directions. Since fluid pressure does not affect the movement of the spool either by force or friction, the valve moves freely.

The unit is for either three-way or four-way distribution The spool moves only 7/16-inch for a full reversal of fluid distribution and the pedal for foot operation moves through an angle of about 10 degrees. A latch is combined with the pedal to hold it down until unlatched by the foot, whereupon the pedal is raised by a spring to the starting



Foot-operated valve manufactured by Hanna Engineering Works

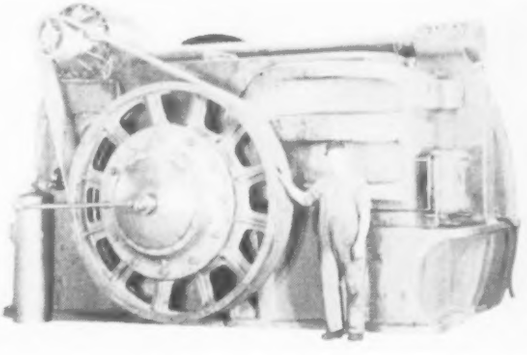
position. By the removal of one pin the latch may be made inoperative so that the valve will reverse immediately when the operator's foot leaves the pedal. The base plate is large and the valve will not tip when operated even though no floor bolts are used in the plate. This permits moving the valve about the floor until the most desirable permanent location is found for each job and each operator. The cylinder and piston of the valve may be removed without breaking any of the pipe connections or disturbing the pedal.

♦ ♦ ♦

Simplified Air Clutch—National Machinery Co., Tiffin, O., recently announced a new simplified air type clutch as alternate equipment for the quadruple abutment starting and stopping clutch used on its forging machines. While the positive type clutch is efficient and satisfactory, the pneumatically operated clutch eliminates the noise caused by the pick-up when the clutch block engages the abutment in the gear, the company claims. Pressure is applied to the friction disks by a large diameter air plunger which forces the plates together quickly. Multiple disks of unusually large area are employed in this design of clutch to hold down the unit pressure, and maintain a low temperature even when tripped at frequent intervals. The accompanying illustration showing a 6-inch National forging machine with air-operated clutch, gives a fair conception of its generous dimensions.

When the air pressure is released compression springs not only expel the used air but separate the friction plates to reduce wear and heating effect. An extremely small amount of air is required and low pressure will operate the clutch efficiently. In conjunction with this air clutch the company employs its "friction-slip relief" as a separate unit to serve as the safety or relief for overloads on the machine. This enables the use of a large capacity, oversize air clutch, which need not serve the double purpose of a driving means and a slip relief, as generally employed. This combination also serves as a "telltale" to indicate if the machine is being subjected to overloads or if repair is indicated on the clutch. National builds a full range of sizes of these air clutches; they can be furnished for other uses where high torque and fast operation are factors.

NATIONAL MACHINERY CO. has introduced a simplified air clutch as alternate equipment for the quadruple abutment starting and stopping clutch employed on its forging machines. This mechanism is available in a full range of sizes



New Trade Publications

REFRACTORIES — General Refractories Co., 106 South Sixteenth street, Philadelphia, has issued a bulletin on its carbex silicon carbide brick.

TOOLS—Catalog No. 534 of the Leetonia Tool Co., Leetonia, O., covers its line of tools for the hardware and marine trade.

HEATING ELEMENT—Cooley Electric Furnace Co., 433 North Capitol avenue, Indianapolis, has issued a leaflet on its Doreco heating element, for use in laboratory furnaces.

PORCELAIN ENAMEL—A bulletin by the Insulated Steel Construction Co., Middletown, O., is devoted to its stainless steel clip strips for attaching porcelain enamel on building exteriors.

COMPRESSED AIR CLEANER—Hagan Corp., Pittsburgh, has issued a bulletin on a cleaner it has perfected for removing moisture, oil and dirt from compressed air.

COMPRESSORS—Worthington Pump & Machinery Corp., Harrison, N. J., has issued a bulletin on its steam booster compressors, with illustrations of several installations.

ELECTRICAL EQUIPMENT—Square D Co., Detroit, in a highly-colored broadside calls attention to the part it has played in industrial recovery by offering better equipment for the power problems of industry.

DIE STEEL—A bulletin on Cromovan, its triple die steel, has been issued by the Firth-Sterling Steel Co., McKeesport, Pa. It contains data on this material, with directions for handling it to obtain best results.

PACKING—Johns-Manville, 22 East Fortieth street, New York, has issued a 48-page catalog describing more than 60 types of packings. It includes a table of recommendations showing type of packing best suited for each requirement.

PHOTO-RELAY—A new catalog section, No. 43-950, has been issued by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., on a type of its photo-relay for application to a wide variety of uses in industry. It describes construction and operation and gives specifications and list prices.

POT FURNACES—Bulletin HD-534 by the Hevi Duty Electric Co., Milwaukee, is devoted to pot furnaces for lead, salt, babbitt and similar materials used in heat treating small parts. Round and rectangular types are included. Illustrations and tables of specifications are shown.

FURNACE PRESSURE CONTROL—Leeds & Northrup Co., 4901 Stenton avenue, Philadelphia, in bulletin No. 842, describes its furnace pressure control for metallurgical and other industrial furnaces. It contains a description of the design, construction and maintenance costs of this instrument.

V-BELT DRIVES—A 12-page loose-leaf booklet on V-belt drives has been prepared by the Medart Co., Potomac and DeKalb streets, St. Louis. It contains engineering and purchasing information on all types of multiple and fractional horsepower Medart V-belt drives.

SAFETY HEADS—A device bearing the same relation to pressure vessels as a fuse does to an electric circuit, is described in a booklet by Black, Sivals & Bryson Inc., Oklahoma City, Okla. It is installed to back up safety valves and relieve pressure before an explosion can occur.

SPEED REDUCERS—A catalog of its speed reducers, No. 1415, with horsepower and other engineering data and dimension diagram has been issued by the Link-Belt Co., 910 South Michigan avenue, Chicago. It covers single, double and triple reduction units of herringbone gear type and a full line of flexible couplings.

CHAIN—Baldwin-Duckworth Chain Corp., Springfield, Mass., has issued a chain book which includes in addition to the catalog feature a description of regular and special chain, with engineering information as to how to determine correct chain drives, arrangements of sprockets, center distance and alignment and other factors.

SWAGING MACHINE—The modern art of swaging is described in a booklet by the Torrington Co., Torrington, Conn., in which revised data on swaging are presented and various examples of this procedure on solid and tubular material are shown. Reproductions and specifications of the present new line of swaging machines manufactured by this company are also included.

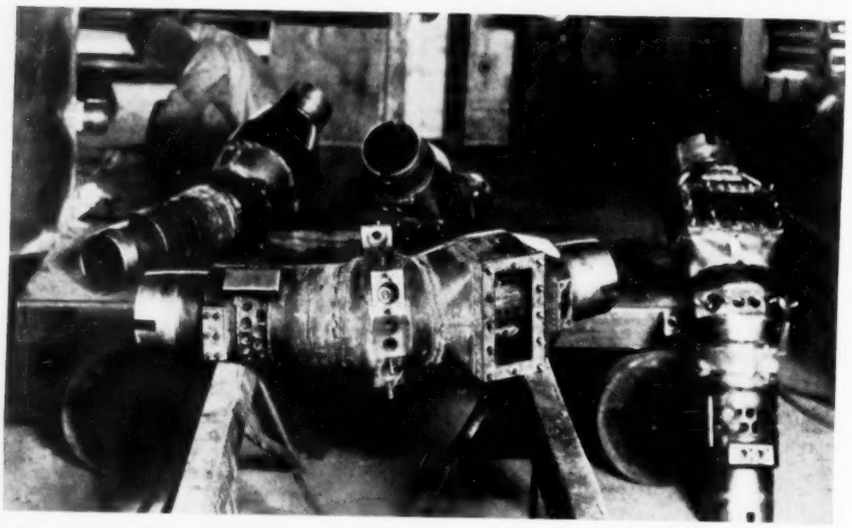
HYDRAULIC PRESSES — Baldwin-Southwark Corp., Philadelphia, in bulletin No. 81 describes its solid carbon dioxide presses for forming blocks of what is popularly known as dry ice. The bulletin tells of the commercialization of this material as a refrigerant, something of its little-known physical characteristics and describes several of the presses.

JACKBITS—A bulletin, No. 2012-C, on this form of detachable rock drill has been issued by Ingersoll-Rand Co., 11 Broadway, New York. Six-point, four-point and Carr bits are illustrated, with both center and side holes. A large cross sectional drawing shows the form of thread used on the bits and rods. Tables of rod types and sizes are given, with dimensional drawings of the various shanks.

HEATING—Gorton Heating Corp., Cranford, N. J., in bulletin No. 99, describes its equalizing system which assures that all radiators will heat evenly and all rooms will be heated when the thermostat shuts off the fire.

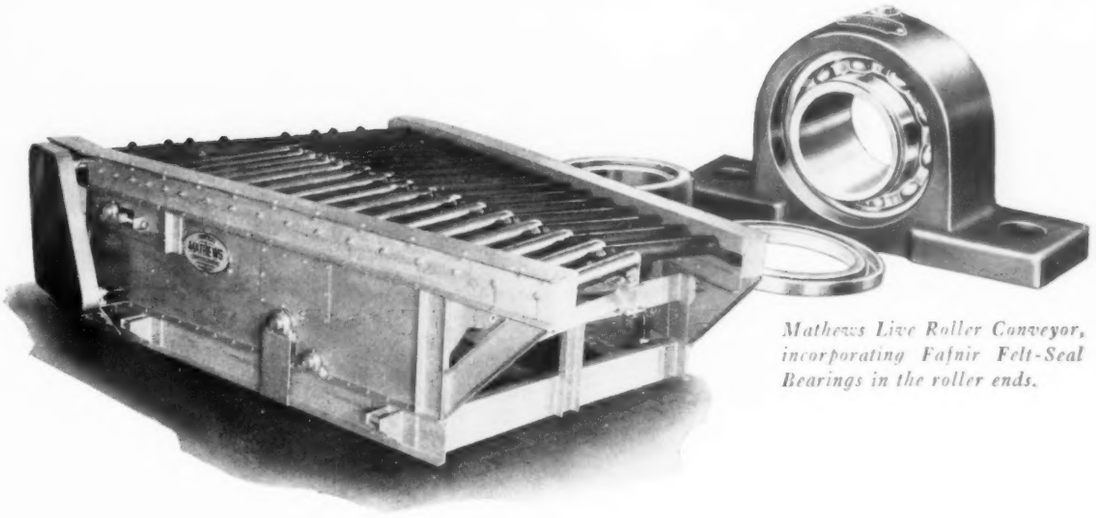
GEARS—Reduction in the cost of gear tooth chamfering is the theme of a bulletin by the City Machine & Tool Works, Dayton, O. It has perfected a tool to do this work automatically, with adjustment to produce any form of tooth desired.

BRONZE WELDING—Recent important advances in the use of the oxy-acetylene bronze welding process have led the Linde Air Products Co., 30 East Forty-second street, New York, to bring out a new edition of its pamphlet on the progress of bronze welding. Contents are arranged so that procedures for work on cast iron, malleable iron, steel and wrought iron, copper, brass and bronze are discussed comprehensively. Another bulletin is entitled "Principles of Bronze Welding," and discusses composition and strength characteristics of bronze welding rods, the underlying theory of the flow of bronze welding material and important elements of welding technique.



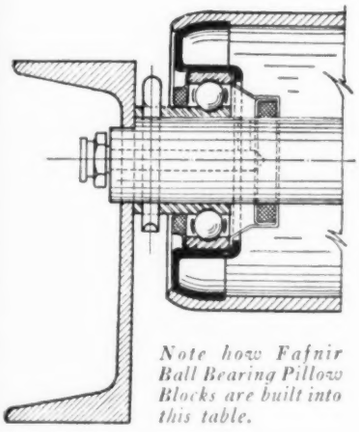
DIESEL CYLINDERS BUILT BY ARC WELDING: Blazing new trails in construction of diesel engines, F. B. Stearns of Cleveland is building an experimental diesel embodying arc welded steel cylinders for use in marine-type engines. Cylinders shown here are for a 320-horsepower engine operating at 1300 revolutions per minute. Some 16 pieces are required for each cylinder; inner sleeve is of case hardened steel, outer portions of mild steel. Thornton Co., Cleveland, did the welding with machines and electrodes supplied by Lincoln Electric Co., Cleveland

For Continuous Handling of HOT STEEL SHEETS



Mathews Live Roller Conveyor, incorporating Fafnir Felt-Seal Bearings in the roller ends.

NEW WEAN-MATHEWS CONVEYOR AND CATCHER TABLES USE FAFNIRS



Note how Fafnir Ball Bearing Pillow Blocks are built into this table.

As Mathews says, "The use of high-grade bearings throughout is an important factor in the life of this equipment since the rollers are still only during change of mill rolls, production continuing on a 24-hour basis". Heat must be retained in the sheets between the furnace and rolling mill, hence the surface speed of 250 feet per minute in these tables. And on the built-in ball bearing type roll, a continuous load of 800 lbs. per roller can be sustained.

These facts serve to emphasize the quality which Fafnir builds into every bearing. The deep races and large balls, the scientifically selected alloy steel, the craftsmanship and unfailing inspections all contribute to make Fafnir Ball Bearings outstanding in giving full protection for every gear, shaft and wheel that they support.

Fafnir combines with this quality a wide range of types and sizes which is best described as "the most complete line of ball bearings in America". Specialized engineering service offers designers and builders the assurance that the exact unit most fitted for the job will be selected. Avail yourself of this service. THE FAFNIR BEARING COMPANY, *New Britain, Conn.* Atlanta . . . Chicago . . . Cleveland . . . Dallas . . . Detroit . . . Milwaukee . . . Minneapolis . . . New York . . . Philadelphia.

Safeguarding Quality

FAFNIR BALL BEARINGS

Iron and Steel Composite (Revised)

An unweighted average of per-ton quotations on 25 iron and steel products, including 5 pig iron, 5 scrap, 3 semifinished steel and 12 finished steel products

1929

Week ended	
Jan. 2	$35.87
9	35.91
16	35.93
23	35.99
30	36.02
Average for January	35.94
Feb. 6	35.99
13	35.99
20	35.90
27	35.97
Average for February	35.96
Mr. 6	35.93
13	35.92
20	35.94
27	36.13
Average for March	35.98
April 3	36.14
10	36.44
17	36.45
24	36.59
Average for April	36.40
May 1	36.56
8	36.55
15	36.55
22	36.52
29	36.49
Average for May	36.53
June 5	36.44
12	36.50
19	36.47
26	36.43
Average for June	36.46
July 3	36.34
10	36.31
17	36.34
24	36.33
31	36.33
Average for July	36.33
Aug. 7	36.34
14	36.37
21	36.38
28	36.37
Average for August	36.36
Sept. 4	36.36
11	36.15
18	36.15
25	36.13
Average for September	36.20
Oct. 2	36.03
9	35.94
16	35.78
23	35.75
30	35.74
Average for October	35.85
Nov. 6	35.70
13	35.66
20	35.56
27	35.49
Average for November	35.60
Dec. 4	35.44
11	35.44
18	35.46
25	35.38
Average for December	35.43
Average for year	36.09

1930

Jan. 1	$35.39
8	35.30
15	35.20
22	35.04
29	35.00
Average for January	35.19
Feb. 5	34.98
12	34.90
19	34.90
26	34.90
Average for February	34.92
Mar. 5	34.94
12	34.81
19	34.74
26	34.68
Average for March	34.79
April 2	34.28
9	34.22
16	34.19
23	34.13
30	33.99
Average for April	34.16
May 7	33.70
14	33.58
21	33.35
28	33.34
Average for May	33.49
June 4	33.38
11	33.30
18	33.26
25	33.19
Average for June	33.28
July 2	33.12
9	33.10
16	32.97
23	32.92
30	32.90
Average for July	33.00
Aug. 6	32.89
13	32.92
20	32.93
27	32.86
Average for August	32.90
Sept. 3	32.80
10	32.79
17	32.76
24	32.70
Average for September	32.76
Oct. 1	32.64
8	32.39
15	32.35
22	32.23
29	32.16
Average for October	32.35
Nov. 5	32.03
12	31.99
19	31.90
26	31.87
Average for November	31.95
Dec. 3	31.82
10	31.81
17	31.60
24	31.62
31	31.62
Average for December	31.69
Average for year	36.21

1931

Jan. 7	$31.63
14	31.71
21	31.72
28	31.70
Average for January	31.69
Feb. 4	31.66
11	31.66
18	31.62
25	31.61
Average for February	31.64
Mar. 4	31.60
11	31.61
18	31.72
25	31.65
Average for March	31.65
April 1	31.59
8	31.59
15	31.50
22	31.34
29	31.33
Average for April	31.47
May 6	31.21
13	31.00
20	30.98
27	31.09
Average for May	31.07
June 3	30.85
10	30.84
17	30.82
24	30.76
Average for June	30.82
July 1	30.78
8	30.83
15	30.79
22	30.76
29	30.75
Average for July	30.78
Aug. 5	30.75
12	30.75
19	30.74
26	30.69
Average for August	30.73
Sept. 2	30.62
9	30.63
16	30.61
23	30.60
30	30.61
Average for September	30.61
Oct. 3	30.39
10	30.33
17	30.30
24	30.26
31	30.21
Average for October	30.30
Nov. 7	30.20
14	30.20
21	30.17
28	30.08
Average for November	30.16
Dec. 5	30.00
12	29.97
19	29.89
26	29.74
Average for December	29.90
Average for year	30.90

1932

Jan. 2	29.60
9	29.56
16	29.76
23	29.70
30	29.62
Average for January	29.65
Feb. 6	29.25
13	29.24
20	29.24
27	29.22
Average for February	29.24
Mar. 5	29.23
12	29.23
19	29.21
26	29.45
Average for March	29.28
April 2	29.47
9	29.41
16	29.40
23	29.46
30	29.45
Average for April	29.44
May 7	29.39
14	29.36
21	29.29
28	29.30
Average for May	29.34
June 4	29.20
11	29.12
18	29.08
25	28.97
Average for June	29.09
July 2	28.95
9	28.91
16	28.83
23	28.83
30	28.83
Average for July	28.87
Aug. 6	28.67
13	28.76
20	28.81
27	28.84
Average for August	28.77
Sept. 3	28.90
10	28.91
17	28.96
24	28.96
Average for September	28.93
Oct. 1	28.97
8	28.97
15	28.96
22	28.81
29	28.79
Average for October	28.90
Nov. 5	28.81
12	28.80
19	28.77
26	28.77
Average for November	28.79
Dec. 3	28.32
10	28.28
17	28.26
24	28.26
31	28.26
Average for December	28.28
Average for year	29.05

1933

Jan. 7	$28.26
14	28.27
21	28.08
28	28.08
Average for January	28.17
Feb. 4	27.99
11	27.92
18	27.92
25	27.91
Average for February	27.94
Mar. 4	27.90
11	27.91
18	27.91
25	27.95
Average for March	27.92
April 1	27.71
8	27.74
15	27.77
22	27.80
29	27.90
Average for April	27.78
May 6	28.19
13	28.28
20	28.42
27	28.43
Average for May	28.33
June 3	28.46
10	28.75
17	28.77
24	28.85
Average for June	28.71
July 1	29.23
8	29.61
15	29.82
22	29.80
29	29.88
Average for July	29.67
Aug. 5	29.93
12	29.91
19	29.91
26	29.94
Average for August	29.92
Sept. 2	30.27
9	30.29
16	30.26
23	30.31
30	30.65
Average for September	30.36
Oct. 7	30.59
14	30.52
21	30.58
28	30.42
Average for October	30.53
Nov. 4	30.27
11	30.28
18	30.21
25	30.24
Average for November	30.25
Dec. 2	30.92
9	30.96
16	31.01
23	31.07
30	31.07
Average for December	31.01
Average for year	29.30

1934

Jan. 6	$31.10
13	31.13
20	31.17
27	31.20
Average for January	31.15
Feb. 3	31.21
10	31.30
17	31.33
24	31.34
Average for February	31.30
Mar. 3	31.36
10	31.43
17	31.42
24	31.34
31	31.34
Average for March	31.38
April 7	31.33
14	33.15
21	33.12
28	33.09
Average for April	32.67
May 5	33.03
12	33.00
19	32.94
26	32.89
Average for May	32.97
June 2	32.81
9	32.83
16	32.84
23	33.16
30	33.15
Average for June	32.96
July 7	32.38
14	32.33
21	32.28
28	32.28
Average for July	32.32

36% Drop in Pig Iron Output; Markets Drift

All Gains Since January Lost—Scrap Sales Watched as Indicators—175,000 Tons of Tin Plate Needed for Drought Purchases—Steel Rate 26½

A NET loss of 18 in active blast furnace stacks in July left only 74 in blast Aug. 1 and dropped the daily pig iron making rate 39 per cent, surrendering all of the improvement since the turn of the year.

Since June 1 a total of 43 stacks has been blown out, the 74 now active comparing with 105 in service a year ago. July's daily rate of 39,630 gross tons contrasts with 64,563 tons in June and 58,108 tons last July. The 7-month total for 1934 is 11,081,152 tons; a year ago it was 6,426,095 tons, and in 1932, 5,734,742 tons.

Meanwhile, production of steel also is moving to lower levels. The national average eased 3 points to 26½ per cent last week when moderate declines in the Pittsburgh, Chicago, eastern Pennsylvania, Wheeling, Cleveland, Birmingham and New England districts were offset only by a shade of improvement at Buffalo and a stationary position at Detroit.

Five widely-scattered transactions in steelmaking scrap—one each at Chicago, Youngstown and Buffalo and two at St. Louis—attracted attention last week in an otherwise listless iron and steel market, for their possible barometric significance. The tonnage was small—probably 30,000 tons—but the sales were made at the market and denoted the first interest by steelmakers in raw materials in some weeks.

These sales strike the keynote of the entire iron and steel market—it is dull but not demoralized. Underneath is a strong sentiment that within 30 days some degree of improvement in buying will set in. By the end of that period, automobile manufacturers should be releasing the first steel required for 1935 models—not in large tonnages but making a start.

The drought last week developed a faint silver lining. For canning meat animals which the government is now purchasing in the stricken areas of the West, for distribution among those on relief rolls next winter, 175,000 tons of tin plate will be required. A slight fillip was noted in tin plate production last week, due to this.

Structural steel awards declined last week to 16,134 tons, slightly under the weekly average for the year to date, despite a slightly more active market in New York. Demand for reinforcing bars for bridge work is fair. Labor trouble in oil fields is holding up some plate business at Chicago.

A seasonal development that may bolster the sheet market is the approach of production on new models of radios. A large manufacturer in the Philadelphia district is expected to buy shortly. New York city supplies the activity in rails, requiring 11,451 tons of these classifications for subways.

Prices are generally steady except for a $1 increase in terne plate, restoring its former relationship to black sheets. STEEL's revised iron and steel composite, stands at $32.28 this week. The finished steel composite is holding at $54, while the scrap index is off 8 cents to $10.17.

STEEL Modernizes Its Iron and Steel Composite

CHANGING times require changing indicators. In the iron and steel markets the relative importance of various products is constantly undergoing modification, and any true picture of the market situation as a whole must take this into consideration. Hence STEEL this week is modernizing its iron and steel composite. Since *Iron Trade Review*, predecessor of STEEL, on Nov. 11, 1920, introduced this composite, scrap has become an increasingly important market factor, alloy steel has won a place, strip has become a major product. In its new version this composite, which is the unweighted average of the per-ton quotations on 25 products, includes 5 grades of pig iron, 5 classifications of scrap, 3 semifinished and 12 finished products. In pig iron and scrap, the range covers "key" classifications with due regard for geographical considerations. The inclusion of bars, plates, shapes, strip, sheets, wire, alloy steel, tin plate, rails and pipe in finished products insures accurate reflection of the situation in the leading consuming outlets. This new composite will be more sensitive than its predecessors, and from week to week will afford a trustworthy guide to the price situation. At the outset, this new composite is slightly lower than the former one. For the benefit of STEEL's many readers who follow its composite, averages back to 1929 are given on the opposite page.

COMPOSITE MARKET AVERAGES

	Aug. 4	July 28	One Month Ago July, 1934	Three Months Ago May, 1934	One Year Ago Aug., 1933	Five Years Ago Aug., 1929
Iron and Steel Composite (revised)	$32.28	$32.28	$32.32	$32.97	$29.92	$36.36
Finished Steel Composite	54.00	54.00	54.05	54.80	47.50	57.93
Steelworks Scrap Composite	10.17	10.25	10.30	11.30	11.57	16.46

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip and cast iron pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Aug. 4, 1934	July 1934	May 1934	Aug. 1933
Finished Material				
Steel bars, Pittsburgh	1.80	1.80	1.90	1.60
Steel bars, Chicago	1.85	1.85	1.95	1.70
Steel bars, Philadelphia	2.09	2.09	2.19	1.91
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.65
Shapes, Pittsburgh	1.80	1.80	1.85	1.60
Shapes, Philadelphia	2.00½	2.00½	2.05½	1.81½
Shapes, Chicago	1.85	1.85	1.90	1.70
Tank plates, Pittsburgh	1.80	1.80	1.85	1.60
Tank plates, Philadelphia	1.98½	1.98½	2.03½	1.79½
Tank plates, Chicago	1.85	1.85	1.90	1.70
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	2.00	1.65
Sheets, No. 24, hot ann., Pitts.	2.40	2.45	2.65	2.25
Sheets, No. 24, galvan., Pitts.	3.10	3.10	3.25	2.85
Sheets, No. 10, hot rolled, Gary	1.95	1.95	2.10	1.80
Sheets, No. 24, hot anneal., Gary	2.55	2.55	2.75	2.35
Sheets, No. 24, galvan., Gary	3.20	3.20	3.35	2.95
Plain wire, Pittsburgh	2.30	2.30	2.30	2.10
Tin plate, per base box, Pitts.	5.25	5.25	5.25	4.25
Wire nails, Pittsburgh	2.60	2.60	2.60	2.10
Semifinished Material				
Sheet bars, open-hearth, Youngs.	$28.00	28.40	30.00	26.00
Sheet bars, open-hearth, Pitts.	28.00	28.40	30.00	26.00
Billets, open-hearth, Pittsburgh	27.00	27.40	29.00	26.00
Wire rods, Pittsburgh	38.00	38.00	38.00	35.00

	Aug. 4, 1934	July 1934	May 1934	Aug. 1933
Pig Iron				
Bessemer, del. Pittsburgh	19.76	19.76	19.76	18.26
Basic, Valley	18.00	18.00	18.00	16.00
Basic, eastern, del. eastern Pa.	19.76	19.76	19.76	17.26
No. 2 foundry, del. Pittsburgh	19.26	19.26	19.26	17.76
No. 2 foundry, Chicago	18.50	18.50	18.50	17.00
Southern, No. 2, Birmingham	14.50	14.50	14.50	13.00
No. 2X, Eastern del. Philadelphia	20.63	20.63	20.63	17.88
Malleable, Valley	18.50	18.50	18.50	16.50
Malleable, Chicago	18.50	18.50	18.50	17.00
Lake Superior charcoal, del. Chi.	23.54	23.54	23.54	23.04
Gray forge, del. Pittsburgh	18.88	18.88	18.88	17.13
Ferromanganese, del. Pittsburgh	89.79	89.79	90.24	87.24
Scrap				
Heavy melting steel, Pittsburgh	$12.00	12.00	12.80	13.75
Heavy melt. steel, No. 2, east. Pa.	8.50	8.90	9.00	10.50
Heavy melting steel, Chicago	9.50	9.55	10.85	10.40
Rails for rolling, Chicago	10.75	10.85	12.15	11.25
Railroad steel specialties, Chicago	10.25	10.50	12.40	11.15
Coke				
Connellsville, furnace, ovens	3.60	3.60	3.45	2.75
Connellsville, foundry, ovens	4.60	4.60	4.60	3.10
Chicago, by-product foundry, del.	9.25	9.25	9.25	8.25

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.85c
Gary, base	1.95c
Chicago, del.	1.98c
New York, del	2.18c
Philadelphia, del.	2.14c
Birmingham, base	2.00c
St. Louis, del.	2.17c
F.o.b. cars, dock	
Pacific ports	2.45c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.40c
Gary, base	2.50c
Chicago, del	2.53c
Detroit, del.	2.60c
New York, del.	2.73c
Philadelphia, del	2.69c
Birmingham, base	2.55c
St. Louis, del	2.72c
F.o.b. cars, dock, Pacific ports	3.00c

GALVANIZED No. 24

Pittsburgh, base	3.10c
Gary, base	3.20c
Chicago, del	3.23c
Philadelphia, del.	3.39c
New York, del.	3.43c
Birmingham, base	3.25c
St. Louis, del	3.42c
San Francisco, f.o.b. cars, dock	3.70c

TIN MILL BLACK No. 28

Pittsburgh, base	2.75c
Gary, base	2.85c
St. Louis, del.	3.07c

COLD ROLLED No. 10

Pittsburgh, base	2.50c
Gary, base	2.60c
Detroit, delivered	2.70c
Philadelphia, del.	2.79c
New York, del	2.83c
F.o.b. cars, dock, Pacific ports	3.10c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, base	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.24c
New York, del	3.28c

ENAMELING SHEETS

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

Tin plate, coke base	
contract	$5.25
Do., stock	$4.90
*Long ternes, No. 24 unassorted	3.40c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 2.00c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot strip	17c	18.5c	21c	26c
Cold strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.80c
New York, del	2.08c
Philadelphia, del.	1.98½c
Boston, del.	2.20c
Buffalo, del.	2.03½c
Chicago or Gary base	1.85c
Cleveland, del.	1.98½c
Birmingham, base	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific Coast, f.o.b. cars, dock	2.35c
St. Louis, del.	2.07c

Structural Shapes

Pittsburgh, base	1.80c
Philadelphia, del	2.00½c
New York, del.	2.05¼c
Boston, del.	2.18½c
Bethlehem, base	1.90c
Chicago, base	1.85c
Cleveland, del.	1.98½c
Buffalo, base	1.90c
Gulf ports	2.20c
Birmingham, base	1.95c
Pacific Coast, f.o.b. cars, dock	2.35c

Bars

SOFT STEEL

Pittsburgh, base	1.80c
Chicago or Gary	1.85c
Duluth, base	1.95c
Birmingham, base	1.95c
Cleveland, base	1.85c
Buffalo	1.90c
Detroit, del.	1.95c
Pacific Coast ports cars, dock, c.i.f.	2.35c
Philadelphia, del.	2.09c
Boston, del.	2.20c
New York, del.	2.13c
Pitts., forg. qual.	1.95c-2.05c

RAIL STEEL
To Manufacturing Trade

Pittsburgh base	1.70c
Chicago or Gary, base	1.75c
Moline, Ill., base	1.75c
Cleveland, base	1.75c
Buffalo, base	1.80c

IRON

Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia, base	1.89c
Pittsburgh, refined	2.75c-7.50c

REINFORCING

New billet, cut lengths, carlots

Pittsburgh	2.05c
Chicago, Gary, Buffalo Cleve., Birm., Young	2.10c
Gulf ports	2.45c
Pacific coast ports	2.35c
Philadelphia, del.	2.34c

Rail Steel

Pittsburgh, base	1.90c
Chicago, Buffalo, Cleveland, Birm., Young	1.95c
Gulf ports	2.30c

Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland (Per 100-lb. keg)

Standard wire nails	$2.60
Cement coated nails	2.60
Galvanized nails, 15 gage and coarser	4.60c
Do., 16 gage and finer	5.10c

(Per pound)

Polished staples	3.30c
Galvanized fence staples	3.55c
Barbed wire, galv.	3.00c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$63.00
Plain wire, 6-9 gage to mfg. trade	2.30c

Anderson, Ind., Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire	3.20c

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars and Shafting □ □

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Gary, Ind., Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars □

Hot Rolled

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.45c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20
4100	.15 to .25	Mo.	0.50
4600	.20 to .30	Mo. 125-1.75 Ni.	1.05
5100	.80-1.10 Cr.		0.45
5100	Cr. spring		base
6100	bars		1.20
6100	spring		0.70
Cr., Ni., Van.			1.50
Carbon van.			0.95
9250	Carbon base plus extras		

Strip and Hoops □

Hot strip to 23⅛-in.

Pittsburgh	1.85c
Chicago, base	1.95c
Birmingham, base	2.00c
Detroit, delivered	2.05c
Phila., delivered	2.14c
New York, del.	2.18c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-rolled strip, Pitts., Cleve.	2.60c
Worcester, Mass.	2.80c

Rails, Track Material □

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 24-45 lbs.	$27.00
50-60 lbs.	$24.00
70-75 lbs.	$18.00
80-85 lbs.	$25.00
100 lbs.	$26.00
Light rails, billet qual., Pittsb., Chi.	$35.00
Do., reroll. qual.	$34.00
Angle bars, mills	2.55c
Spikes, R. R. base	2.40c
Track bolts, base	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ½ x 6 and smaller	70 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts, without nuts	70 off
Tire bolts	60 off
Stove bolts, 75 off in pkgs.; 83 off in bulk, 15,000 or more of a size.	
Rolled thread machine bolts, ½x6 and smaller,	70 off
Step bolts	66 off
Elevator bolts	66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in., smaller	85 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10 off
Do., larger than 1-in.	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila.	6.00 off

Cut Nails □ □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more no discount on size extras	$3.05
Do. less than 5 kegs; no discount on size extras	$3.20

Piling □ □

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads, Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

In.	Steel Blk.	Steel Gal.
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

	Steel	
2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½

LINE PIPE

	Steel
½, butt weld	57½
⅛-inch, but weld	50½
¼—⅜, buttweld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63
Iron	
⅛—1½-inch, black and galv. take 4 pts.. over; 2½—6-inch 2 pts. over discounts for same sizes, standard pipe lists. 8—12-inch, no extra.	

BOILER TUBES

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¾—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 2000 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron; 10,000 pounds to carloads, base less 5%; under 10,000 pounds, two points under base only.

SEAMLESS BOILER TUBES

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots of 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$38.00-39.00
4-in., Birmingham	41.00-42.00
4-in., Chicago	49.00-50.00
6 to 24-in., Chicago	46.00-47.00
3-in & over, east fdy	42.00
Do., 4-in.	45.00

Class A pipe $2 over Class B.

Stnd. fitgs., Birm. base	$100.00

Semifinished Steel □

BILLETS AND BLOOMS

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$27.00
Philadelphia	32.30
Duluth	31.00
Forging, Pitts., Chi. and Buffalo	32.00
Forging, Duluth	36.00

SHEET BARS

Pitts., Cleve., Young., Chi., Buff., Canton, O., and Sparrows Point, Md.,	28.00

SLABS

Pitts., Cleve., Young.	27.00

WIRE RODS

Pitts., Cleveland	38.00
Chicago	39.00
Worcester, Mass.	40.00

SKELP

Pitts., Chicago	1.70c

Coke □ □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville Fur.	$3.60- 3.85
Connellsville fdry	4.60
Connell, prem. fdy.	5.35
New River fdry	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
Chi., ov., outside del.	8.50
Chicago, del	9.25
New England, Del.	10.50
St. Louis, del.	9.25
Birmingham, ovens	6.00
Indianapolis, del.	8.75
Cincinnati, del.	9.30
Cleveland, del.	9.25
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.50
Philadelphia, del.	9.00

Coke By-Products □

Per gallon, producers' plants. Tank lots

	Spot
Pure benzol	$0.19
90 per cent benzol	$0.19
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per lb. f.o.b. New York

Phenol (200 lb. drums)	0.163c
Do. (100 lbs.)	0.173c

Eastern Plants, Per Pound,

†Naphthalene flakes and balls, in bbl.	6.00

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.25

†Western prices ½-cent up.

Pig Iron

Delivered prices do not include switching charges except as noted. No. 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25. Gross tons.

BASING POINTS:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Birmingham, Ala., southern del.	14.50	.....	13.50	19.00
Buffalo	18.50	19.00	17.50	19.50
Chicago	18.50	18.50	18.00	19.00
Cleveland	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
Duluth	19.00	19.00	.....	19.50
Erie, Pa.	18.50	19.00	18.00	19.50
Everett, Mass.	19.50	20.00	19.00	20.50
Granite City, Ill.	18.50	18.50	18.00	.....
Hamilton, O.	18.50	18.50	18.00	19.00
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	18.50	18.50	18.00	19.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Sparrows Point, Md.	19.50	.....	19.00	.....
Swedeland, Pa.	19.50	20.00	19.00	20.50
Toledo, O.	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
DELIVERED FROM BASING POINTS:				
Akron, O., from Cleveland	19.76	19.76	19.26	20.26
Baltimore from Birmingham	20.02	.....	19.90	.....
Boston from Birmingham	19.62	.....	19.50	.....
Boston from Everett, Mass.	20.00	20.50	19.50	21.00
Boston from Buffalo	20.00	20.50	19.50	21.00
Brooklyn, N. Y., from Bethlehem	21.77	22.27	.....	.....
Brooklyn, N. Y., from Bmghm.	21.39	.....	.....	.....
Canton, O., from Cleveland	19.76	19.76	19.26	20.26
Chicago from Birmingham	†18.72	.....	18.60	.....
Cincinnati from Hamilton, O.	19.51	19.51	19.01	.....
Cincinnati from Birmingham	19.13	.....	19.01	.....
Cleveland from Birmingham	18.62	.....	18.50	.....
Indianapolis from Hamilton, O.	20.77	20.77	20.27	21.27
Mansfield, O., from Toledo, O.	20.26	20.26	19.76	20.76
Milwaukee from Chicago	19.50	19.50	19.00	20.00
Muskegon, Mich., from Chicago, Toledo or Detroit	21.40	21.40	20.90	21.90
Newark, N. J., from Birmingham	20.51	.....	.....	.....
Newark, N. J., from Bethlehem	20.89	21.39	.....	.....
Philadelphia from Birmingham	19.88	.....	19.76	.....
Philadelphia from Swedeland, Pa.	20.26	20.76	19.76	.....
Pittsburgh dist. from Neville Island	(Neville Island base, plus 63c, 76c and $1.13 switching chgs.)			
Saginaw, Mich., from Detroit	20.60	20.60	20.10	21.10
St. Louis from Granite City, Ill.	19.00	19.00	18.50	.....
St. Louis from Birmingham	18.62	.....	18.50	.....
St. Paul from Duluth	20.94	20.94	.....	21.44

†Over 0.70 phos.

LOW PHOS.

Basing Points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.50. Basing Point: †Johnson City, Tenn.—$23.50

†Off grade material is $19.50

Philadelphia, standard and copper bearing 24.63

GRAY FORGE		CHARCOAL	
Valley furnace	18.25	Lake Superior fur.	21.00
Pitts. dist. fur.	18.25	Do., del. Chicago	24.04

SILVERY†

Jackson County, O., base; 6%—$22.75; 7—$23.75; 8—$24.75; 9—$25.75; 10—$26.75; 11—$27.75. Buffalo base prices $1.25 higher.

BESSEMER FERROSILICON†

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25. Buffalo base prices $1.25 higher.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. & low phos.	9.50
Swedish basic, 65%	9.00
Swedish low phos...	9.50
Spanish No. Africa basic, 50 to 60%..	9.00
Tungsten, spot, sh. ton unit, duty pd.	$17.75-18.25
N. F. fdy., 55%.....	7.00
Chrome ore, 48% gross ton, c.i.f.....	$18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	24.00
So. African, 52%....	24.00
So. Afr., 49-51%....	22.00
Indian, 58-50%	nominal
Indian, 48-50%	nominal

Refractories

Per 1000 f.o.b. Works

FIRE CLAY BRICK

First Quality

Pa., Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	45.00

Second Quality

Pa., Ill., Ky., Md., Mo., Ga., Ala.....	40.00

Ohio

First quality	$40.00
Intermediary	36.00
Second quality	25.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet, E. Chicago....	54.00
Birmingham, Ala....	52.00

MAGNESITE

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases	40.00
Domestic dead-burned grains, net ton f.o.b. Chewelah, Wash.	22.00

BASIC BRICK

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Magnesite brick	$65.00
Chrome brick	45.00
Chemically bonded magnesite	55.00

Fluorspar, 85-5

*Washed gravel, duty paid, tide, net ton	$19.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$15.50-16.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	85.00
Do., Balti. base..	85.00
Do., del. Pittsburgh	89.79
Spiegeleisen, 19-20%, dom. fur. spot†..	26.00
Ferrosilicon 50%, freight all., cl.	77.50
Do., less carload..	85.00
Do., 75 per cent..	126-130.00

Spot, $5 a ton higher.

Silicomang., 2½ carb. 2% carbon 95.00; 1%	90.00 105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Ferrotungsten, stand., lb. cont. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., allow., lb.	7.00
Do., under 1 ton..	7.50
Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis, 18%, $2 unitage	42.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage	55.00
Ferromolybdenum, stand. 50-60%, lb.	0.96
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 9.00c Conn. copper

Sheets

Yellow brass (high)	14.50
Copper, hot rolled....	16.00
Lead, cut, to jobbers	7.50
Zinc, 100-lb. base....	9.50

Tubes and Pipes

High yellow brass..	17.00
Seamless copper	17.25

Rods

High yellow brass..	13.00
Copper, hot rolled..	13.25

Anodes

Copper untrimmed..	13.75

Wire

Yellow brass (high)	15.00

Old Metals

Deal, buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.37½-4.62½
Chicago	4.00- 4.25
Cleveland	4.75- 5.00
St. Louis	4.25- 4.50
Heavy Copper and Wire	
*New York	6.00- 6.25
Chicago, No. 1	5.75- 6.00
Cleveland	5.75- 6.00
St. Louis	5.50- 5.75
Composition Brass Borings	
New York	4.12½-4.37½
Light Copper	
New York	4.62½-4.87½
Chicago	4.50- 4.75
Cleveland	4.75- 5.00
St. Louis	4.50- 4.75
Light Brass	
Chicago	2.12½-2.37½
Cleveland	2.75- 3.00
Lead	
New York	2.87½-3.12½
Cleveland	2.75- 2.90
Chicago	2.75- 3.00
St. Louis	2.85- 3.00
Zinc	
New York	2.00- 2.25
Cleveland	2.00- 2.25
St. Louis	2.25- 2.50
Aluminum	
Clips, soft, Cleve....	12.00-12.50
Borings, Cleveland..	6.00- 6.25
Mixed, cast, Cleve..	9.25- 9.75
Mixed cast, St. L.	9.00-10.00

Secondary Metals

Brass ingot, 85-5-5-5	8.75
Stand. No. 12 Alum.	14.00

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL	
Birmingham	9.00-10.00
Boston, dealers	5.25- 5.50
Buffalo, No. 1	10.00-10.50
Buffalo, No. 2	8.50- 9.00
Chicago, No. 1	9.00- 9.50
Cleveland, No. 1	9.00- 9.50
Cleveland, No. 2	8.50- 9.00
Detroit, No. 1	8.00- 8.50
Detroit, No. 2	7.00- 7.50
Eastern Pa.	10.00
Eastern Pa., No. 2	8.00- 9.00
Federal, Ill.	7.25- 7.50
Granite City, R. R.	7.25- 7.75
Granite City, No. 2	6.25- 6.75
N. Y., deal. R. R.	7.00- 8.00
N. Y., deal. No. 2	5.50- 6.50
Pittsburgh, No. 1	11.75-12.25
St. Louis	6.50- 7.00
Valleys, No. 1	11.50-12.00
COMPRESSED SHEETS	
Buffalo, dealers	8.50- 9.00
Chicago, factory	8.25- 8.75
Cleveland	8.50- 9.00
Detroit	8.00- 8.50
E. Pa., new mat.	9.50-10.00
Pittsburgh	11.25-11.75
St. Louis	5.00- 5.50
Valleys	11.00-11.50
BUNDLED SHEETS	
Buffalo	6.50- 7.00
Cincinnati, del.	6.50- 7.00
Cleveland	7.00- 7.50
Pittsburgh	10.25-10.75
St. Louis	4.00- 4.25
SHEET CLIPPINGS LOOSE	
Chicago	4.25- 4.75
Cincinnati	5.00- 5.50
Detroit	4.50- 5.00
St. Louis	3.75- 4.25
STEEL RAILS, SHORT	
Birmingham	10.50-11.50
Buffalo	13.00-13.50
Chicago (3 ft.)	10.00-10.50
Chicago (2 ft.)	10.50-11.00
Cincinnati, del.	10.50-11.00
Detroit	10.00-10.50
Pitts., open-hearth, 3 ft. and less	14.00-14.50
St. Louis, 2 ft.& less	9.50-10.00
STEEL RAILS, SCRAP	
Boston	5.25- 5.50
Chicago	9.00- 9.50
Pittsburgh	11.75-12.25
STOVE PLATE	
Birmingham	7.00- 7.50
Boston, dealers	3.25- 3.75
Buffalo	8.50- 9.00
Chicago, net	6.50- 7.00
Cincinnati, dealers	5.00- 5.50
Detroit, net	6.00- 6.50
Eastern Pa.	8.50
N. Y., deal. fdry.	6.00
St. Louis	6.00- 6.50
COUPLERS, SPRINGS	
Buffalo	13.00-13.50
Chicago, springs	9.75-10.25
Eastern Pa.	13.00-13.50
Pittsburgh	13.75-14.25
St. Louis	8.00- 8.50
ANGLE BARS—STEEL	
Chicago	9.75-10.25
St. Louis	7.75- 8.25
RAILROAD SPECIALTIES	
Chicago	9.75-10.25
LOW PHOSPHORUS	
Buffalo, billets and bloom crops	13.00-14.00
Cleveland, billet, bloom crops	13.00-13.50
Eastern Pa. crops	14.00-14.50
Pittsburgh, billet, bloom crops	14.50-15.00
Pittsburgh, sheet bar crops	13.50-14.00
FROGS, SWITCHES	
Chicago	9.00- 9.50
St. Louis, cut	8.00- 8.50
SHOVELING STEEL	
Chicago	9.00- 9.50
Federal, Ill.	6.75- 7.00
Granite City, Ill.	6.75- 7.00
RAILROAD WROUGHT	
Birmingham	6.50- 7.00
Boston, dealers	6.00- 6.50
Buffalo, No. 1	7.50- 8.00
Buffalo, No. 2	10.00-10.50
Chicago, No. 1 net	7.75- 8.25
Chicago, No. 2	9.00- 9.50
Cincinnati, No. 2	7.50- 8.00
Eastern Pa.	10.00
N. Y., No. 1 deal.	7.00- 7.50
St. Louis, No. 1	6.50- 7.00
St. Louis, No. 2	7.50- 7.75
SPECIFICATION PIPE	
Boston	3.50- 4.00
Eastern Pa.	9.00
New York, dealers	3.50- 3.75
BUSHELING	
Buffalo, No. 1	8.50- 9.00
Chicago, No. 1	8.25- 8.75
Cinci., No. 1 deal.	6.00- 6.50
Cincinnati, No. 2	7.00- 7.25
Cleveland, No. 2	7.00- 7.25
Detroit, No. 1 new	7.00- 7.50
Valleys, new No. 1	11.00-11.50
MACHINE TURNINGS	
Birmingham	4.50- 5.00
Boston, dealers	1.75- 2.00
Buffalo	4.00- 4.50
Chicago	5.00- 5.50
Cincinnati, dealers	4.50- 5.00
Cleveland	5.50- 6.00
Detroit	4.50- 5.00
Eastern Pa.	5.50- 6.00
New York, dealers	2.00- 2.50
Pittsburgh	8.00- 8.50
St. Louis	4.00- 4.50
Valleys	7.50- 8.00
BORINGS AND TURNINGS	
For Blast Furnace Use	
Boston, dealers	3.25- 3.50
Buffalo	6.00- 6.50
Cincinnati, dealers	4.50- 5.00
Cleveland	7.00- 7.50
Detroit	5.50- 6.00
Eastern Pa.	5.00- 5.50
New York, dealers	1.50- 1.75
Pittsburgh	7.25- 7.75
CAST IRON BORINGS	
Birmingham, plain	4.50- 5.00
Boston, chemical	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	6.00- 6.50
Chicago	5.25- 5.75
Cincinnati, dealers	4.50- 5.00
Cleveland	7.00- 7.50
Detroit	5.50- 6.00
E. Pa., chemical	12.00-15.00
New York, dealers	1.50- 1.75
Pittsburgh	7.25- 7.75
St. Louis	4.00- 4.25
PIPE AND FLUES	
Cincinnati, dealers	4.75- 5.25
RAILROAD GRATE BARS	
Buffalo	6.50- 7.00
Chicago, net	6.75- 7.25
Cincinnati	4.50- 5.00
Eastern Pa.	8.00- 8.50
New York, dealers	5.00- 5.50
St. Louis	4.00- 4.50
FORGE FLASHINGS	
Boston, dealers	4.00- 4.25
Buffalo	8.50- 9.00
Cleveland	8.00- 8.50
Detroit	6.50- 7.00
FORGE SCRAP	
Boston, dealers	4.00- 4.50
Chicago, heavy	9.75-10.25
Eastern Pa.	9.25- 9.50
ARCH BARS, TRANSOMS	
St. Louis	10.00-10.50
AXLE TURNINGS	
Boston, dealers	4.00- 4.50
Buffalo	8.50- 9.00
Chicago, elec. fur.	8.50- 9.00
Cleveland	6.00- 6.50
Eastern Pa.	10.00-10.50
St. Louis	6.00- 6.25
STEEL CAR AXLES	
Birmingham	10.00-10.50
Boston, ship, point.	9.00- 9.50
Buffalo	13.00 13.50
Chicago, net	10.50-11.00
Eastern Pa.	14.00-15.00
St. Louis	10.00-10.50
SHAFTING	
Boston, ship point.	10.50-10.75
Eastern Pa.	15.00-15.50
New York, dealers	10.75-11.25
St. Louis	11.00-11 50
CAR WHEELS	
Birmingham, iron	8.50- 9.00
Boston, iron deal.	5.75- 6.00
Buffalo, iron	12.00-12.50
Buffalo, steel	13.00-13.50
Chicago, iron	9.75-10.25
Chicago, rolled steel	9.75-10.25
Cincinnati, iron	8.00- 8.50
Eastern Pa., iron	11.50-12.00
Eastern Pa., steel	13.00-13.50
Pittsburgh, iron	11.25-11.75
Pittsburgh, steel	13.75-14.25
St. Louis, iron	7.50- 8.00
St. Louis, steel	8.00- 8.50
NO. 1 CAST SCRAP	
Birmingham	9.00- 9.50
Boston, No. 2	6.00
Boston, tex. con.	10.50-11.00
Buffalo, cupola	9.50-10.00
Buffalo, mach.	11.00-11.50
Chicago, agri. net	7.25- 7.75
Chicago, mach. net	8.50- 9.00
Chi., railroad net	8.00- 8.50
Cinci., mach. cup	9.50-10.00
Cleveland, cupola	10.75-11.25
Detroit, net	8.50- 9.00
Eastern Pa., cupola	11.00-12.00
Pittsburgh, cupola	13.00-13.50
San Francisco, del.	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	7.00- 7.50
St. L., No. 1 mach.	8.50- 9.00
HEAVY CAST	
Boston, del.	5.00- 5.25
Buffalo, break.	7.75- 8.25
Cleveland, break.	7.50- 8.00
Detroit, break.	6.50- 7.00
Detroit, auto net	9.00- 9.50
Eastern Pa.	10.50
N. Y., No. 1, deal.	6.50- 6.75
N. Y., break. deal.	6.50- 6.75
Pittsburgh	10.00-10.50
MALLEABLE	
Boston, consum.	12.00-12.50
Buffalo	11.50-12.00
Chicago, R. R.	9.25- 9.75
Cincinnati, agri. del.	8.00- 8.50
Chicago, R. R.	9.25- 9.75
Cleveland, rail	11.00-11.50
Detroit, auto	8.50- 9.00
St. Louis, R. R.	8.25- 8.75
Eastern Pa., R. R.	11.50-12.00
RAILS FOR ROLLING	
5 feet and over	
Birmingham	9.50-10.50
Boston, dealers	7.00- 7.25
Buffalo	12.00-12.50
Chicago	10.25-10.75
Eastern Pa.	12.00-13.00
New York, dealer	7.50- 8.00
St. Louis	9.00- 9.50
LOCOMOTIVE TIRES	
Chicago (cut)	9.75-10.25
St. Louis, No. 1	9.50- 10.00
LOW PHOS. PUNCHINGS	
Buffalo	13.75-14.25
Chicago	10.25-10.75
Eastern Pa.	14.50-15.00
Pittsburgh	13.50-14.00

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin New York: Spot	Straits Tin New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
July 28	9.00	9.12½	8.75	52.10	52.15	3.75	3.60	4.30	*22.90	8.12½	36.00
July 30	9.00	9.12½	8.75	52.10	52.15	3.70	3.60	4.30	*22.90	8.12½	36.00
July 31	9.00	9.12½	8.75	52.10	52.15	3.70	3.60	4.30	*22.90	8.12½	36.00
Aug. 1	9.00	9.12½	8.75	51.70	51.75	3.75	3.60	4.30	*22.90	8.12½	36.00
Aug. 2	9.00	9.12½	8.75	51.65	51.70	3.75	3.60	4.30	*22.90	8.12½	36.00
Aug. 3	9.00	9.12½	8.75	51.70	51.75	3.75	3.60	4.30	*22.90	8.25	36.00

*Nominal range 19.00c to 22.90c.

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	2.90c
Boston††	2.95c
Buffalo	2.95c
Chattanooga	3.31c
Chicago	2.95c
Cincinnati	3.15c
Cleveland	2.95c
Detroit	3.03½c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.30c
New York‡(d)	3.22c
Pittsburgh(h)	2.90c
Philadelphia*	2.90c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.19c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	
Portland	3.40c
Chattanooga	3.31c
Baltimore*	3.00c
Chicago	2.75c
Cincinnati	3.15c
New York‡(d)	3.32c
Philadelphia*	2.90c
St. Louis	3.19c
Tulsa	3.25c

REINFORC. BARS	
Buffalo	1.95c
Chattanooga	3.31c
Chicago	2.10c-2.60c
Cleveland (c)	1.97½c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.15c
New Orleans	3.50c
Pitts., plain(h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	3.50c
St. Louis	3.24c
Tulsa	3.25c
Young	2.30c-2.60c

SHAPES	
Baltimore*	3.90c
Boston††	3.17c
Buffalo	3.20c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland	3.31c
Detroit	3.40c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.55c
New York(d)	3.37c
Philadelphia*	2.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c

PLATES	
Baltimore*	2.90c
Boston††	3.18c
Buffalo	3.20c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.40c
Cleveland, ¼-in. and over	3.31c
Detroit	3.40c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles	3.70c
New Orleans	3.55c
New York(d)	3.40c
Philadelphia*	2.95c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	
Baltimore*	3.05c
Boston††	3.25c
Buffalo	3.10c
Chattanooga	3.36c
Chicago	3.00c
Cincinnati	3.20c
Cleveland	3.11c
Det., 8-10 ga.	3.13½c
Houston	3.35c
Los Angeles	3.80c
New Orleans	3.55c
New York	3.27c
Portland	3.75c
Philadelphia*	3.05c
Pittsburgh(h)	2.95c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.29c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	
Baltimore*†	3.51c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.21c
Chicago	3.85c
Cincinnati	4.05c
Cleveland	3.96c
Detroit	3.98½c
Los Angeles	4.35c
New York	3.85c
Philadelphia*†	3.55c
Pittsburgh**	3.55c
Portland	4.40c
San Francisco	4.40c
Seattle	4.40c
St. Louis	4.14c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	
Baltimore *†	4.21c
Buffalo	4.00c
Boston (g)	4.55c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.70c
Cleveland	4.61c
Detroit	4.70c
Houston	4.40c
Los Angeles	5.05c
New Orleans	4.95c
New York	4.50c
Philadelphia*†	4.25c
Pitts.** (h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.79c
St. Paul	4.19c
Tulsa	5.10c

BANDS	
Baltimore*	3.15c
Boston††	3.25c
Buffalo	3.30c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.45c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.38½c
Houston	3.25c
Los Angeles	3.90c
New Orleans	3.95c
New York(d)	3.62c
Philadelphia	3.15c
Pittsburgh(h)	3.10c
Portland	3.90c
San Francisco	4.05c
Seattle	3.90c
St. Louis	3.54c
St. Paul	3.20c
Tulsa	3.45c

HOOPS	
Baltimore	2.80c
Boston	4.25c
Buffalo	3.55c
Chicago	3.30c
Cincinnati	3.45c
Det., No. 14 and lighter	3.38½c
New York	3.62c
Philadelphia	3.40c
Pittsburgh(h)	3.70c
Seattle	5.60c
St. Paul	3.75c

COLD FIN. STEEL	
Baltimore(c)	3.71c
Boston	4.00c-4.50c
Buffalo (h)	3.55c
Chattanooga*	4.06c
Chicago (h)	3.50c
Cincinnati	3.70c
Cleveland(h)	3.50c
Detroit	3.63½c
Los Ang.(f)(d)	4.95c
New Orleans	4.30c
New York	3.92c-4.42c
Philadelphia	3.73c
Pittsburgh(h)	3.45c
Portland (f)	4.75c
San Fran.(f)(d)	5.95c
Seattle(f)(d)	4.75c
St. Paul	3.20c
St. Louis	3.74c
Tulsa	4.65c

COLD ROLL. STRIP	
Boston, 0.100-in., 500 lb. lots	5.35c
Buffalo	5.25c
Chicago	3.27c
Cincinnati(b)	3.42c
Cleveland (b)	3.20c
Detroit	3.33c
New York	4.70c
St. Louis	3.56c

(b) Plus straightening, cutting and quantoty differentials.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs. extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York, Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Aug. 2

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d	
PIG IRON				
Foundry, 2.50-3.00 Silicon	$15.12	3 0 0	$8.04	1 13 0
Basic bessemer	13.61	2 14 0*	7.30	1 10 0
Hematite, Phos. .03-.05	15.25	3 0 6	....	.....
SEMIFINISHED STEEL				
Billets	$25.72	5 10 0	$11.44	2 7 0
Wire rods, No. 5 gage	39.31	7 16 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$39.06	7 15 0	$26.77	5 10 0
Merchant bars	1.69c	7 10 0	.69c to .72c	3 2 6 to 3 5 0
Structural shapes	1.66c	7 7 6	.68c	3 1 6
Plates, †¼ in. or 5 mm.	1.80c	8 0 0	.91c	4 2 6
Sheets, black, 24 gage or 0.5 mm.	2.08c	9 5 0	1.13c to 1.16c	5 2 6 to 5 5 0
Sheets, gal., 24 gage, corr.	2.53c	11 5 0	1.43c	6 10 0
Bands and strips	1.86c	8 5 0	.88c	4 0 0
Plain wire, base	2.08c	9 5 0	1.18c	5 7 6
Galvanized wire, base	2.36c	10 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	2.70c	12 0 0	1.27c	5 15 0
Tin plate, box 108 lbs.	$ 4.54	0 18 0	.....	.....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d 4($3.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$17.01	3 7 6(a)	$13.86	210	$14.57	310	$24.43	63
Basic bessemer pig iron	16.38	3 5 0(a)*	12.21	185	13.63	290	26.95 (b)	69.50
Furnace coke	4.41	0 17 6	7.92	120	5.17	110	7.37	19
Billets	27.72	5 10 0	28.38	430	20.68	440	37.42	96.50
Standard rails	1.86c	8 5 0	2.10c	700	2.31c	1,100	2.32c	132
Merchant bars	1.94c	8 12 0	1.68c	560	1.16c	550	1.94c	110
Structural shapes	1.97c	8 15 0	1.65c	550	1.16c	550	1.89c	107.50
Plates, †¼-in. or 5 mm.	1.90c	8 8 9	2.10c	700	1.47c	700	2.24c	127
Sheets, black	2.36r	10 10 0§	2.55c	850‡	1.63c	775‡	2.53c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.93c	13 0 0	4.50c	1,500	3.15c	1,500	6.51c	370
Plain wire	2.08c	9 5 0	3.39c	1,130	2.31c	1,100	3.04c	173
Bands and strips	2.10c	9 7 0	1.95c	650	1.47c	700	2.24c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. (a) del. Middlesbrough. (b) hematite

Bars

Bar Prices, Page 56

Pittsburgh—No merchant steel bar buying of size is being done and small orders predominate. A spotty condition also exists in forging bar buying. The bar market at present probably has as few orders current as at any time since July of 1932, although individual orders are heavier than at that time. Steel bars at 1.80c base, Pittsburgh, are without change, with forging quality extras of $3 to $5 a ton, also unchanged.

Chicago—Demand from the automotive trade is shrinking as the industry draws nearer the end of its run on 1934 models. Automobile sales have held up unusually well this summer, contrary to the usual seasonal tendency, and this has proved an unexpected help to the steel industry. Current needs of farm equipment makers are light, but the trade may provide an unexpected volume of business later.

Cleveland—Bookings of steel bar business for July brought the smallest tonnage for any month since the depression started, one important barmaker reporting its orders for the final week of July being less than several single days' transactions in June. However, expectation is that by the end of August most consumers again will have to enter the market, even now making small purchases for piecing out stocks.

New York—Bar specifications are little improved and producers look for further inactivity the next two or three weeks. Bolt and nut manufacturers are specifying perhaps as lightly as at any time in a number of weeks ,and railroads are showing little interest. The market is 1.80c, Pittsburgh, or 2.13c, New York.

Philadelphia—Bar tonnage is light, although manufacturing consumers continue to specify a little more freely than jobbers. Commercial steel bars are 1.80c, Pittsburgh, or 2.09c, Philadelphia. Common iron bars are also moving slowly, with prices steady at 1.89c to 1.94c, Philadelphia.

Washington—Bids will be taken Aug. 14 by the department of supplies and accounts, navy department, on 356,750 pounds of various thicknesses, 16 to 20-foot lengths, of round medium rivet bar steel and 285,200 pounds to be delivered to various navy yards. Bids Aug. 17 for 26,520 pounds round and 1000 pounds hexagon corrosion-resisting bar steel and 2840 pounds with class six finish.

Plates

Plate Prices, Page 56

Cleveland—The 1200 tons of plates for Cleveland sewage disposal plant tops have not yet been placed. The going volume of business continues small with little new buying except for special vessel and railroad repair jobs. Fabricated plate users have not heard from some figures recently submitted.

Pittsburgh—Plate buying is infrequent although occasional small orders are current, taking the full 1.85c, Pittsburgh, base. American Bridge Co. at its Ambridge, Pa., yards will complete work this month on repairs to some 70 Carnegie Steel Co. barges, Dravo Contracting Co. having completed similar work on ten Carnegie barges. Although low on contract for the lighthouse tender JASMINE and recommended for award, Dravo Contracting Co., Pittsburgh, has not yet received formal contract. This requires 150 tons of plates. Acme Boiler Works, Gallipolis, O., has been awarded contract for two boilers 22 feet in length by 43-inch diameter with 6 and 8-inch flues, by the Campbell Transportation Co., Pittsburgh.

Chicago—Some business for plate makers is pending but is slow to develop, due to financing difficulties. Current orders are small and not much is expected for another 30 days. Labor difficulties in the oil industry are holding up some business which would otherwise develop. A few distillery projects will come up for consideration later.

Washington—Bureau of supplies and accounts, navy department, will take bids Aug. 7 on 18,420 pounds of various thickness class B marine boiler plate steel and 2940 pounds of class C.

New York—Plates are quiet, with inquiry including 300 tons of tank work for the First National Oil Co., Long Island City, N. Y.

Philadelphia—Plate production is down slightly, to the lowest level in at least several months. New specifications are small and scattered and with the exception of the navy boats, on which construction bids will be opened Aug. 15, little tonnage is in sight. Incidentally, platemakers are now supplying estimates to private yards figuring on this navy work. Railroad demand is tapering, with the Reading Co. winding up its present car repair program. The market is 1.90c, Coatesville, Pa., or 1.98½c, Philadelphia.

Contracts Placed

900 tons, 54-inch pipe, Sunset pipe line, Hetch Hetchy project, San Francisco, to Consolidated Steel Corp., Los Angeles.

175 tons, twelfth naval district, San Francisco, to Jones & Laughlin Steel Corp., Pittsburgh.

150 tons, 28-inch dredge pipe, Fort Peck dam, Montana, to unnamed interest.

130 tons, 400,000-gallon elevated tank, Madison, S. Dak., to Pittsburgh-Des Moines Steel Co., Des Moines, Iowa.

Unstated tonnage, one steel derrick boat for dredge WELATKA, United States engineer, Jacksonville, Fla., to Jacksonville Utility Co., Jacksonville, $11,995; bids July 26.

Contracts Pending

1025 tons, gates and trash racks, Parker dam, Nevada; Six Companies Inc, of Delaware, Boulder City, Nev., low on general contract.

125 tons, 24-inch pipe, Lemon Grove & Spring Valley irrigation district, La Mesa, Calif.; bids opened.

110 tons, lighthouse tender RHODODENDRON, Portland, Oreg.; Commercial Iron Works, Portland, Oreg.

100 tons, 300,000-gallon tank, Los Angeles, specification 3342; bids opened.

100 tons, four 100-horsepower locomotive boilers for Fort Peck dam project, Montana; bids opened.

Sheets

Sheet Prices, Pages 56

Chicago—Current sheet orders are largely from the automotive industry for fill-in purposes. Demand in other directions is negligible. Sheetmakers are looking forward to a quiet August, except for the possibility of orders which may be placed by the automotive trade by the fifteenth or twentieth. Consumption is running ahead of specifications and this factor is making for a stronger situation later.

Philadelphia—Though sheet consumption is lagging, there are prospects of substantial releases this month by a leading radio manufacturer in this district who is scheduled to go into production this month on its 1934 models, which line will include some additions. Pennsylvania opened bids recently on 65 tons of patented sheets for sign posts.

Pitttsburgh—Sheet mill operations are ranging slightly upward and at 20 to 25 per cent show a fractional gain over last week. Sheet requirements other than automotive are laggard. Small orders have tested the new base of 2.40c, Pittsburgh, on black sheets and the occasional au-

tomotive orders are going at the 2.50c price on No. 10 gage cold-rolled and 2.95c base on No. 20 gage cold-rolled. Base of 1.85c on No. 10 gage hot-rolled is holding unchanged; likewise the 3.10c base on galvanized sheets, although demand for the latter has been severely restricted by present rural conditions.

New York—Sheet market is less active than a couple of weeks ago. Spot releases have tapered off and actual fabrication has diminished. Uncertainty as to prices continues to be expressed in some quarters, although the recent reduction of $1 a ton on long ternes, effective Aug. 4, is regarded as a natural consequence of the reduction in black sheets around the middle of July. It again establishes the usual differential of $20 a ton over black sheets.

Washington—Bids will be opened Aug. 17, by the navy on 690 tons galvanized, 186 tons black, 61 tons corrugated galvanized and 50 tons cold-rolled sheets, for the bureau of construction and repair, Schedule 3031.

Cincinnati—Sheet output in this district continues close to 30 per cent. Demand from automobile builders has been lighter but buying for miscellaneous consumption is fairly well sustained. Buyers are avoiding contracts for third quarter needs.

Railroads

Track Material Prices, Page 57

Placing of additional streamlined equipment is the feature of the railroad market. The Chicago, Burlington & Quincy has awarded to the Edward G. Budd Mfg. Co., Philadelphia, two three-car articulated trains similar to the Zephyr, recently put in service. They will be of stainless steel, powered with 660-horsepower diesel motors, to be supplied by Winton Engine Co., Cleveland. They will have capacity for 100 passengers, against 80 in the Zephyr, due to elimination of the mail compartments.

Gulf, Mobile & Northern has placed an order with the American Car & Foundry Co., New York, for two three-car streamlined trains with diesel motors. They will be built at the Berwick, Pa., shops.

Current reports that the Pennsylvania will build 2500 to 3000 hopper cars lack confirmation and in any event it seems unlikely such a program will be undertaken until fall.

Board of transportation, New York, will inquire shortly for about 5000 tons of contact rails, in addition to the 6070 tons of standard and 381 tons of guard rails for which purchase recommendations have been made. Chicago, Milwaukee, St. Paul & Pacific has awarded to Timken Roller Bearing Co., Canton, O., bearings and boxes for 25 baggage cars the road will build in its shops at West Milwaukee, Wis. York Ice Machinery Corp., York, Pa., has taken an order from the Reading for air-conditioning equipment for nine passenger cars for its Philadelphia to New York service.

Car Orders Placed

Chicago, Burlington & Quincy, two three-car articulated streamlined trains, to Edward G. Budd Mfg. Co., Philadelphia.

Gulf, Mobile & Northern, two three-car streamlined trains, diesel powered, to American Car & Foundry Co., New York; to be built at Berwick, Pa., plant.

Hooker Electrochemical Co., New York, four chlorine tank cars, two to American Car & Foundry Co., New York, two to General American Tank Car Corp., Chicago.

Rail Orders Pending

Board of transportation, New York, 5000 tons of contact rails, inquiry expected out shortly.

Locomotives Pending

Illinois Central, 11 diesel electric locomotives.

Tin Plate

Tin Plate Prices, Page 56

Pittsburgh—Approximately 175,000 tons of tin plate will be consumed in executing the government's recent order to can the meat from 7,000,000 cattle purchased under the farm policy. About 200 cans for each head means a total of 1,400,000,000 cans.

Buying of fill-in requirements for immediate shipment to can plants, plus initial orders resulting from the government canning program, have increased tin mill operations 15 points to 60 per cent. Prospects for the tomato and corn crops indicate further early improvement. Reduction of $1 a ton on No. 24 unassorted 8-pound long ternes makes the new base price at Pittsburgh 3.40c per pound. Tin mill sizes of black sheets remain unchanged at 2.75c, base Pittsburgh. Standard tin plate is likewise unchanged at $5.25 per base box. Completion of organization of an international cartel in tin plate may lead to a rise in export prices this month.

Pipe

Pipe Prices, Page 57

Chicago—A number of scattered municipal projects, requiring small tonnages of cast pipe, are noted but action on a number of these is being retarded due to failure of government funds to come through promptly. Contracts probably will be placed momentarily on the 2228 tons for Chicago, on which the Glamorgan Pipe & Foundry Co. was low bidder on about 1000 tons and the United States Pipe & Foundry Co. on the remainder.

Pittsburgh—A highly irregular rate of buying is evident not only in standard pipe but in oil country goods and boiler tubes as well. With mill warehouse and consigned stocks now fairly well rounded out after heavy June shipments, present pipe mill operations, around 15 per cent of capacity, are directly in step with small fill-in orders. The pipe price discounts continue unchanged as of the 3½-point advance last April.

New York—Cast pipe business is dull, with a slowing noted in demands for FERA work. Wells, N. Y., has placed several hundred tons.

Cleveland—Following the advance in the price of rigid electrical conduit several days ago, there is little change in the wrought pipe trade at present. Jobbers continue taking in miscellaneous small lots for filling shortages in stocks. Improvement in the volume of trade is anticipated by the end of this month.

Birmingham, Ala.—Production is far from active, awards, coming in slowly and tonnage not heavy. Business in sight, including Chicago tonnage, is over 5500 tons. Small-town waterworks development as yet has not aided pressure pipe manufacturers materially.

Steel Pipe Placed

150 tons, 28-inch land pipe, 240 pieces, each 12 feet 10 inches long, ¼-inch plate, and 500 connecting links, 28-inch diameter, for Fort Peck, Mont., dredges, to Taylor Forge & Pipe Works, Chicago, at $13,220.20 delivered.

Cast Pipe Pending

594 tons, 16-inch, class 150, Gilroy, Calif.; bids in.

428 tons, 4 to 10-inch, class 150, Fallon, Nev.; new bids Aug. 8.

Unstated tonnage, water supply line, Cedar Rapids, Iowa.

Unstated tonnage, water supply line, Green Bay, Wis., municipal water district.

WHETHER THEY GO *or* WHETHER THEY STAY

—The September 24 issue of STEEL—devoted to the Steel Show (New York City, October 1-5) will reach the major executives and operating officials who recommend and authorize purchases.

To Exhibitors—

For those attending the show, the Steel Show issue offers an opportunity to build up interest in your exhibit. The issue appears a week in advance of the exposition opening.

For those who do not attend, an advertisement in STEEL can bring your exhibit to them—at their desks.

To Non-Exhibitors—

Use this opportunity for reaching both groups—the attenders and the stay-at-homes, at this time, when interest is high in new developments and buying is planned. An advertisement in this issue can be *your* exhibit.

The September 24 issue will carry a combination editorial and advertising section in two colors — red and black on India tint coated paper. Devoted to the same interests as the Steel Show (National Metal Exposition), this section offers an unusual advertising opportunity.

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Shapes

Structural Shape Prices, Page 56

New York—Structural shape business has taken on new life, both awards and inquiries improving. Several thousand tons have been placed for municipal work.

Tentative award to an eastern Pennsylvania fabricator of 3500 tons of structurals for pier shed 88 on the Hudson river, New York, is reported.

Chicago—Few inquiries for structural steel made appearance last week, some fabricators reporting activity the slowest in months. A bridge at Columbus Junction, Iowa, will take 2000 tons, a bridge at Eau Claire, Wis., 375 tons, and a sewage disposal plant at Cedar Rapids, Iowa, 200 tons. The Mississippi river dams, previously noted, will require 6000 tons, bids Aug. 18.

Cleveland—More inquiries are being received for small lots of the lighter fabricated shapes, some of them for repair work and others for small highway bridges. Figures have gone in on some fair-sized projects which promise something later in the month. The state highway bridge projects at Columbus as yet have not been closed.

Pittsburgh — McClintic-Marshall Corp., Bethlehem, Pa., has been awarded 829 tons of fabricated shapes for a state highway bridge at Blairsville, Pa. Pittsburgh is inquiring for 400 tons of structurals for bridge repairs. Other structural inquiry and contracts closed are more promising and include some building work under private sponsorship. The market is steady and unchanged at 1.85c, Pittsburgh, for plain material and 2.15c, Pittsburgh, for steel sheet piling. Pennsylvania state highway letting for Aug. 17 asks bids on 136,000 pounds of fabricated structural steel for a Somerset county I-beam stringer bridge. Pennsylvania railroad is taking bids at Pittsburgh on an 800-ton grade elimination at Elmira, N. Y.

Buffalo—District fabricators report an increasingly active market for structural steel with current inquiry in excess of 2500 tons pending and approximately 1000 tons of new business placed locally during the past week. August is expected to develop considerable new inquiry in addition to that included in this week's estimate.

Philadelphia—State bridge work and 1300 tons of bridges for the Pennsylvania railroad dominate structural demand in the local market. Fabricating shop operations are being sustained at a fair rate, however, by continued releases against identified projects let during the first half. The credit situation is still a depressing factor. Shapes are steady at 1.90c, Bethlehem, Pa., or 2.00½c, delivered, Philadelphia.

Shape Contracts Placed

2200 tons, Bayside high school, Queens, New York, to Lehigh Structural Steel Co., Allentown, Pa., through Royal-Rice Inc.

1100 tons, West 205th street viaduct, New York, to American Bridge Co., Pittsburgh, through J. Leopold & Co., New York.

940 tons, bridge, New York Central railroad, Weehawken, N. J., to American Bridge Co., Pittsburgh, through George A. Fuller Co.

920 tons, two state highway bridges, Niles Center, Ill., to American Bridge Co., Pittsburgh.

829 tons, Pennsylvania state highway bridge, Blairsville, Pa., between Indiana and Westmoreland counties, Pennsylvania, to McClintic-Marshall Corp., Bethlehem, Pa., through Freeland, McHale & Patten Inc., Pittsburgh.

630 tons, high school, Utica, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

510 tons, infirmary addition, hospital, Orangeburg, N. Y., to Belmont Iron Works, Philadelphia, through Miller & Gaynor.

490 tons, state bridge SP 461-B, Bexar county, Texas, to Virginia Bridge & Iron Co., Roanoke, Va.

430 tons, Jamestown, N. Y., high school, to McClintic-Marshall Corp., Bethlehem, Pa.

420 tons, state highway bridge, Waterford, N. H., to Phoenix Bridge Co., Phoenixville, Pa.

420 tons, sanitorium, Saratoga Springs, N. Y., for state of New York, to Smith & Caffrey Co., Syracuse, N. Y.

385 tons, bridge No. 3217, Sevier county, Arkansas, to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.

375 tons, bridge, part of Bell street widening project, Montgomery, Ala., to Virginia Bridge & Iron Co., Roanoke, Va.; Forcum-James Co., Dyersburg, Tenn., general contractor. Concrete Steel Co., New York, awarded 85 tons of reinforcing bars.

360 tons, state highway bridge, Monticello, Ind., to Central States Bridge & Structural Co., Indianapolis, Ind.

350 tons, bridge, Redding, Calif., to Moore Dry Dock Co., Oakland, Calif.

340 tons, bathhouses, Saratoga Springs, N. Y., for state of New York, to Shippers Car Line, Milton, Pa.

300 tons, movable towers and cable hoists for Bonneville dam project, Oregon, to Washington Iron Works, Seattle; General Construction Co., Seattle, and J. F. Shea, Portland, Oreg., general contractors.

295 tons, addition, warehouse, U. S. Gypsum Co., Greenville, Miss., to Worden-Allen Co., Milwaukee.

290 tons, transit shed, Albany, N. Y., for state of New York, to Leach Steel Corp., Buffalo.

275 tons, warehouse for Owens-Illinois Glass Co., Terre Haute, Ind., to Mississippi Valley Structural Steel Co., St. Louis.

230 tons, state bridges, highway 8, Shelby-Panola counties, Texas, to Austin Bros., Dallas, Tex.; E. W. Hable, Corsicana, Tex., general contractor.

210 tons, alterations, White House, executive offices, Washington, to Fort Pitt Bridge Works, Pittsburgh; N. P. Severn Co., Chicago, general contractor.

200 tons, deck plate girder spans, Baltimore & Ohio railroad, Springfield, Ill., to American Bridge Co., Pittsburgh.

200 tons, dredge for Nome, Alaska, for Bucyrus-Erie Co., Milwaukee, to Isaacson Iron Works, Seattle.

195 tons, state highway bridge, Midway, Me., to Lackawanna Steel Construction Corp., Buffalo.

190 tons, bridges, Burgess, Va., and Grandy, Va., for Seaboard Air Line railroad, to McClintic-Marshall Corp., Bethlehem, Pa.

180 tons, railroad bridge, Hawks Nest, W. Va., for Chesapeake & Ohio railroad, to Jones & Laughlin Steel Corp., Pittsburgh.

175 tons, Ediz Hook, Wash., coast guard hangar, to Isaacson Iron Works, Seattle; Pioneer Construction Co., Seattle, general contractor.

175 tons, bridge, Lansing, Mich., to the Wisconsin Bridge & Iron Co., North Milwaukee, Wis.

170 tons, railroad bridge, Underwood, Iowa, for Chicago, Milwaukee, St. Paul & Pacific railroad, to Milwaukee Bridge Co., Milwaukee.

165 tons, state highway bridge XI 69-8-11, Vanderbilt county, Michigan, to R. C. Mahon Co., Detroit.

150 tons, bulk station, Tide Water Oil Co., Revere, Mass., to Boston Bridge Works, Cambridge, Mass.; Leslie R. Porter Co., Boston, general contractor.

150 tons, state highway bridge, Indiana county, Pennsylvania, to Fort Pitt Bridge Works, Pittsburgh.

150 tons, bridge project NRH-208, Douglas County, Nebraska, to Omaha Steel Works, Omaha, Nebr.

140 tons, state highway bridge, Sheboygan, Wis., to McClintic-Marshall Corp., Bethlehem, Pa.

130 tons, girls' dormitory, Westminster, Md., to Dietrich Bros., Baltimore.

125 tons, addition, Sattler store, Buffalo, to R. S. McManus Steel Construction Co., Buffalo.

125 tons, barking machine for Washington Pulp & Paper Co., Port Angeles, Wash., to Isaacson Iron Works, Seattle.

125 tons, high school, New Castle county, Delaware, to Modern Iron Works.

120 tons, bridges, Alleghany county, New

Shape Awards Compared

	Tons
Week ended Aug. 4	**16,134**
Week ended July 28	**19,620**
Week ended July 21	**9,363**
This week in 1933	**5,882**
Weekly average for 1933	**15,062**
Weekly average, 1934	**17,321**
Weekly average, July	**18,609**
Total to date, 1933	**481,991**
Total to date, 1934	**554,287**

York, to Lackawanna Steel Construction Corp., Buffalo.

110 tons, theater, Fifth and West Thirty-second streets, Brooklyn, N. Y., to National Bridge Works, Long Island City, N. Y.

110 tons, theater alterations, Brooklyn, N. Y., to George A. Just Co., Brooklyn, through Joseph Garry, general contractor.

100 tons, building at Milwaukee to the Milwaukee Structural Steel Co., Milwaukee.

100 tons, bridge in Catron county, New Mexico, to unnamed interest.

100 tons, bridge at Paris, Ill., to Zimmerly Bridge Co.

100 tons, addition R. & H. Chemicals Corp., Niagara Falls, N. Y., to Dovey Foundry & Machine Co., Niagara Falls.

Shape Contracts Pending

3500 tons, pier shed 88, Hudson river, New York, tentatively placed with eastern Pennsylvania fabricator.

3000 tons, underground project, New York Central railroad, Forty-second to Fifty-third streets, New York.

2000 tons, bridge, Columbus Junction, Iowa.

1300 tons, including 700 tons for a grade crossing, Pennsylvania railroad, Elmira, N. Y.; bids Aug. 14; 600 tons also will be required for three bridges at Buffalo.

1200 tons, Kensington high school, Buffalo; bids Aug. 10.

1025 tons, gates and gate hoists, Parker dam, Nevada; Six Companies Inc., Boulder City, Nev., low on general contract for placing of material only.

1000 tons, sheet piling, Bonneville dam, Oregon.

850 tons, wharf and transit shed, Stockton, Calif; new bids opened.

800 tons, Y. M. C. A. building, Toledo, O.

800 tons, Elmwood avenue bridge, Rochester, N. Y.; bids readvertised.

750 tons, state highway bridge, Enfield, Mo.; Lackawanna Steel Construction Corp., Buffalo, low on Aug. 1 bids.

700 tons, Seaboard Air Line railroad bridge over James river, Richmond, Va.

600 tons, bridge repairs, Binghamton, N. Y.; to be rebid shortly.

470 tons, railroad bridge, Chazy, N. Y., for Delaware & Hudson railroad.

400 tons, repairs to Sixty-second street bridge, Pittsburgh.

400 tons, public school, Reading, Pa.; bids Aug. 13.

375 tons, bridge, Eau Claire, Wis.

330 tons, railroad bridge, Porter, Ind., for New York Central railroad.

300 tons, Washington county hospital, Hagerstown, Md.; bids asked.

300 tons, high school, Bradford, Pa.; Van Sickel Construction Co., low bidder.

222 tons, including 116 tons of plain and 106 tons of fabricated structural steel, Pennsylvania state highway letting, Washington-Allegheny counties; Reliance Steel Products Co., Rankin, Pa., low on July 27 bids.

216 tons, Pennsylvania state highway work, Bedford county; R. D. Thomas & Co., Pittsburgh, low on bids of July 27.

200 tons, gymnasium and science building, Lady Cliff college, Highland Falls, N. Y.

200 tons, field house, St. Mark school, Southboro, Mass.

200 tons, sewage disposal plant, Cedar Rapids, Iowa.

200 tons, three grade schools, Bradford, Pa.; Havens-Coughlin Co., Bradford, general contractor.

195 tons, building at New Bedford, Mass., for Revere Copper & Brass Inc.; bids in.

175 tons, addition to plant, Grit Publishing Co., Williamsport, Pa.

162 tons, Pennsylvania highway work, Bedford county; Whittaker & Diehl Co., Harrisburg, Pa., low on July 27 bids; includes 19 tons of plain steel bars.

115 tons, bridge, Cincinnati; also 70 tons reinforcing bars; Hodges Construction Co., Cincinnati, low for general contract.

113 tons, Pennsylvania state highway work, Columbia count; Gardner Construction Co. Inc., Allentown, Pa., low; includes 20 tons of plain steel bars.

106 tons, bridge in Kern county, California, for state; Griffith Co., Los Angeles, low for general contract.

100 tons, state bridge, Pennington, N. J., Young Bros., Philadelphia, general contractors.

100 tons, Pennsylvania state highway

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work, Philadelphia-Montgomery counties, Fort Pitt Bridge Works, Pittsburgh, low on July 27 bids.
100 tons, addition, Niacet Chemical Co., Niagara Falls, N. Y.; bids in.

Semifinished

Semifinished Prices, Page 57

Semifinished steel reflects fair to good shipments of sheet and tin bars but a profoundly slack demand for billets, both straight and forging quality, wire rods, skelp and tube rounds. Although rolling schedules of the large tin plate mills show an uptrend, several holdups in sheet bar shipments have been sustained from the small nonintegrated sheetmakers. Prices are steady and unchanged and sales of sheet bars are at $28 base, Pittsburgh, billets at $27, Pittsburgh and wire rods at $38 per ton. On a per pound basis, tube rounds are 1.80c and skelp 1.70c, base Pittsburgh.

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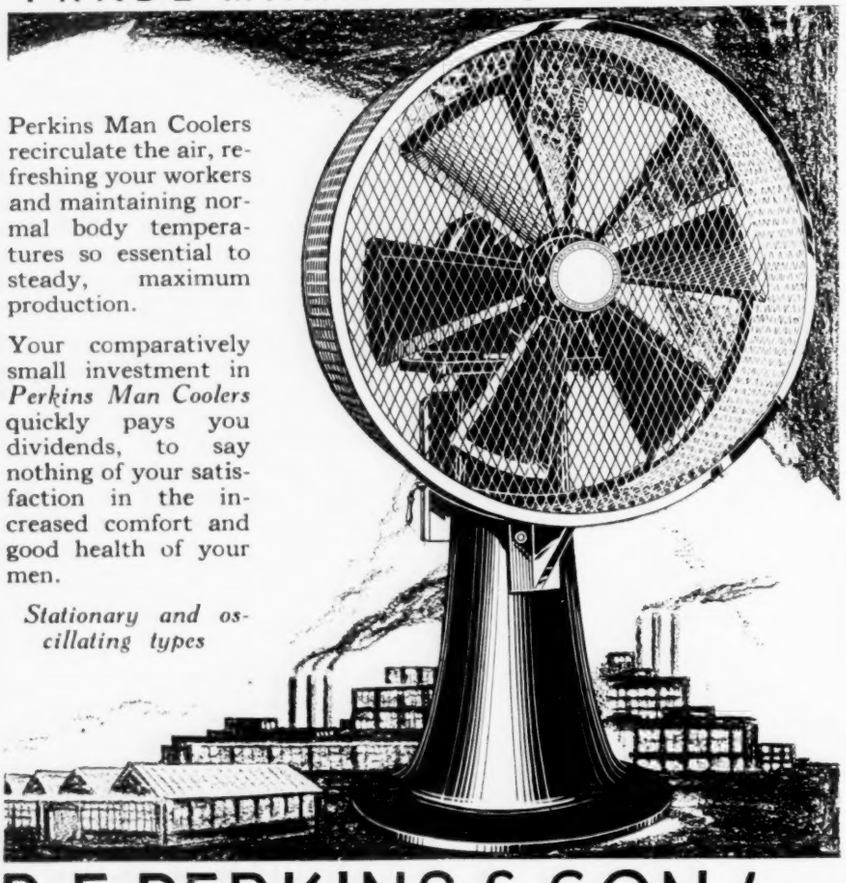

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Reinforcing

Reinforcing Bar Prices, Page 57

Chicago—Activity in the reinforcing bar market is at low ebb, with little tonnage pending and current awards unimportant. One or two small private projects still are pending.

City of Chicago has been given a federal grant of $450,000 for construction of the Ashland avenue bridge across the Chicago river.

Pittsburgh—Reinforcing bars are active with several attractive inquiries outstanding. R. D. Thomas & Co., Pittsburgh, will require 472 tons of plain steel bars for the Bedford county 5-span arch bridge as soon as its general contract bid is approved. Freeland, McHale & Patten Inc., Pittsburgh, are low on general contract for Blairsville borough, Pa., work requiring 117 tons of plain steel bars. A Pennsylvania state highway letting for Aug. 17 has six projects totaling 117,889 pounds of plain steel bars and West Virginia took bids Aug. 3 for 15 highway projects at various locations in the state. Jones & Laughlin Steel Corp. here closed on 200 tons of bars for Pennsylvania railroad electrification work at Patapsco, Md.

Philadelphia—General activity in reinforcing bars remains low, with billet steel bars, cut lengths, holding at 2.05c, Pittsburgh, or 2.33c, Philadelphia.

New York—Reinforcing bar requirements are slightly heavier, but awards are light, led by 800 tons for the Prudential Insurance Co. apartments, Newark, N. J. Bids are in on the first contracts for the New York Central railroad's west side project.

Washington—Bids will be received Aug. 27 at Casper, Wyo., for the Casper canal at the Casper-Alcova, Wyo., project on 825,000 pounds of reinforcing steel bars, furnishing and erecting 130,000 pounds of steel tun-

Concrete Awards Compared

	Tons
Week ended Aug. 4	1,639
Week ended July 28	6,758
Week ended July 21	502
This week in 1933	1,700
Weekly average for 1933	3,321
Weekly average, 1934	4,490
Weekly average, July	3,251
Total to date, 1933	106,271
Total to date, 1934	143,675

nel liner plates and 38,000 pounds of gates and miscellaneous metal work.

Reinforcing Steel Awards

800 tons, apartments, Prudential Insurance Co., Newark, N. J., to Rawlins Co., New York; E. M. Waldron Inc., Newark, general contractor.

350 tons, building for General Aniline Works, Grasselli, N. J., to Rawlins Co., New York, through White Construction Co.

200 tons, Pennsylvania railroad, electrification work at Patapsco, Md., on Washington-Baltimore division, to Jones & Laughlin Steel Corp., Pittsburgh.

150 tons, Brannan street sewer, San Francisco, Calif., to Pacific Coast Steel Corp., San Francisco.

139 tons, storm drain in San Bernardino county, California, for state, to unnamed interest.

Reinforcing Steel Pending

1185 tons, Parker dam, Nevada; Six Companies Inc., Boulder City, Nev., low for general contract.

750 tons, wharf and transit shed, Stockton, Calif.; new bids opened.

417 tons and 100 tons piling, substructure of Kentucky state highway department bridge at Covington; bids deferred until late in August.

472 tons, 3401-foot 5-span reinforced concrete arch bridge, Bedford county, Pennsylvania; R. D. Thomas & Co., Pittsburgh, low for general contract on July 27 bids.

370 tons, Chicago sanitary district sewer; Commonwealth Improvement Co. low for general contract.

157 tons, highway work in Kern county, California, for state; Griffith Co., Los Angeles, Calif., low for general contract.

117 tons, reinforced concrete pavement and bridge, Blairsville borough, Indiana-Westmoreland counties, Pennsylvania; Freeland, McHale & Patten Inc., Pittsburgh, low for general contract.

110 tons, high school at Lake Forest, Ill.; R. C. Feiboldt Co., Chicago, general contractor.

100 tons, grade elimination work, Elmira, N. Y., for Pennsylvania railroad.

100 tons, Verdugo Wash conduit for Los Angeles county, California; bids opened.

Wire

Wire Prices, Page 57

Chicago—Wire makers are confident that the farm areas will account for a larger volume of business this fall in fencing, nails and other products. Some business continues to come from the automotive trade.

Pittsburgh—Buying of wire products had fallen so low last week that a leading independent producer took occasion to close its plant for ten days. The market on merchant wire products reflects only small fill-in lots by jobbers. Manufacturers' wire is equally dull. The market, in carload lots, is quoted $2.60 per keg, Pittsburgh, for nails and 2.30c for plain wire. Prices on other wire products are also unchanged.

Strip Steel

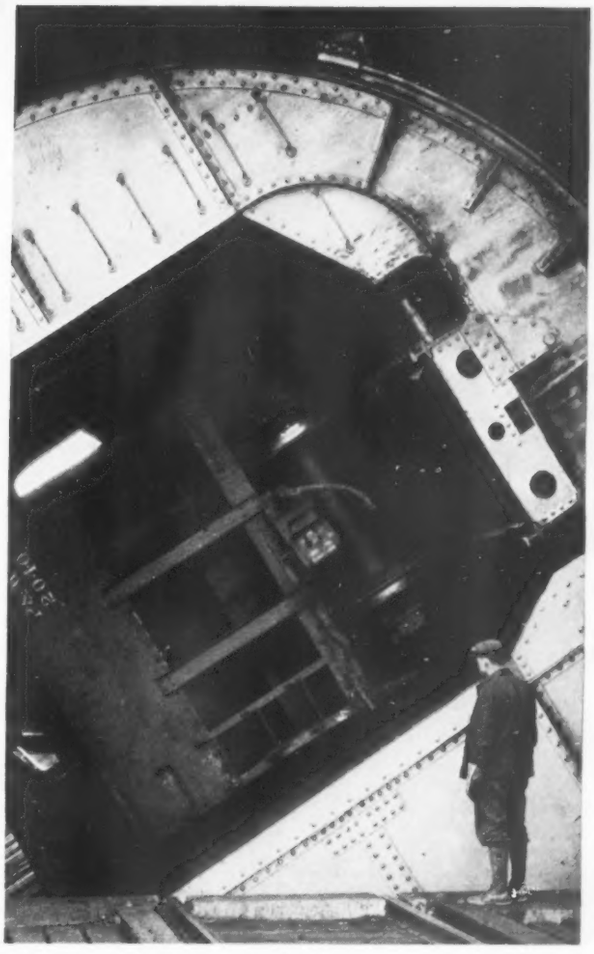
Strip Prices, Page 57

Chicago—Some strip makers are operating on fair schedules but incoming business is light. Most strip business now coming out is from the automotive industry for filling in on requirements not previously anticipated. A little business continues to come from miscellaneous consumers. Producers report that July business was ahead of June and the corresponding period of 1933.

Pittsburgh—Strip steel buying was generally so light last week and orders so small in size that producers had difficulty scheduling mills more than two or three turns. The market holds unchanged at 1.85c, Pittsburgh, for hot-rolled strip steel and 2.60c base, Pittsburgh or Cleveland, for cold-rolled.

Philadelphia—The strip situation appears more listless than even a fortnight ago. However sellers find

CAR Dumpers



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solace in the fact that consumers' stocks, specified before the beginning of this half, are gradually shrinking. Hot-rolled strip is 1.85c, Pittsburgh, or 2.14c, Philadelphia; and cold strip 2.60c, Pittsburgh, or 2.89c, Philadelphia.

New York—Little variation is noted in the restricted buying of strip which has prevailed since the beginning of this half. Consumer stocks are gradually shrinking, but sellers expect little immediate improvement.

Pig Iron

Pig Iron Prices, Page 58

Cleveland—Slowing down in steelworks operations in this area and reduced foundry operations have resulted in the removal this week of three blast furnaces from the active list. Two Corrigan, McKinney Steel Co. stacks are out, one for relining, leaving two stacks blowing. Otis Steel Co. also has taken off a stack, one continuing. Shipments of pig iron continue confined to a carload or two daily, as was expected when the heavy June buying movement filled the yards of most consumers. Inquiries at this time are all for small lots of various grades.

Pittsburgh—Pig iron demand, both in cupola and open-hearth grades, still fails to develop to any extent in this district and only one merchant furnace, Davison Coke & Iron Co.'s Neville Island, Pa., stack, is active. The market lacks sizable basic inquiries and no early improvement is forecast. Several rollmaking foundries here, which have had fair schedules, continue to take shipments, but on reciprocal arrangements from integrated steel producers. Jobbing foundry schedules are down to one and two days weekly. No change is reported in the local price of iron based on Neville Island prices of $18.50 for foundry and malleable, $19 for bessemer and $18 for basic. Bids were opened Aug. 4 for valve repair parts requiring approximately 33,400 pounds of cast iron by the Pittsburgh federal engineers.

Chicago—Spot business in pig iron is appearing in unexpected volume and the outlook is brighter than a few weeks ago. Some of this spot business is coming from consumers not covering sufficiently in June. July shipments fell off sharply compared with June but the showing for the present month probably will be somewhat more favorable. Foundry operations are relatively higher than in the steel producing industry, with the average close to 35 per cent.

Cincinnati—The market here is without important pig iron sales, and likewise without inquiry. Foundry operations have declined generally, so that stocks bought for second quarter shipment are proving adequate to meet needs for the current melt. An inactive pig iron market throughout August is anticipated.

Birmingham, Ala.—Melters are buying against immediate needs with no forward buying evident. Furnace companies are prompt in delivery, some tonnage going to furnace yards. No intimation is given of any change in quotation. Curtailment in production is indicated.

Toronto, Ont.—Merchant pig iron sales for the week continued light. Melters are taking single car lots as demands dictate, but otherwise are showing no interest in the market. The daily melt is holding around 35 per cent.

Buffalo—No inquiry of any size is

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pending, although some sellers predict the latter part of this month will see some fair tonnages purchased. July deliveries of iron were the smallest since midwinter. Production continues on a reduced scale with four blast furnaces making iron, two of which are in steelworks.

St. Louis—Last week saw considerable relief from the heat, thereby enabling foundries to operate at greater capacity than for some time. However, a seasonal slowing down of operations in the stove and other industries was noted during the week.

New York—Although light business prevails in pig iron, a little more fill-in tonnage is noted than a week ago. Some consumers not only report better prospects, but also increased business. However, pig iron producers look for only a modest gain this month, if any. Prices are holding.

Philadelphia—Pig iron consumption continues light, and with most consumers still covered by releases last month, new business remains negligible. In some quarters, little improvement is expected this month. Meanwhile, prices are unchanged.

Washington—Bureau of supplies and accounts, navy department, will take bids Aug. 17 on 402 tons grade A foundry pig iron for various navy yards.

Scrap

Scrap Prices, Page 59

Cleveland—Only small lots of mixed borings and some busheling for delivery outside this district are moving. At present prices scrap materials are difficult to buy from holders. Steel consumers show no interest. Prices are nominal and unchanged. A steelmaker at Youngstown, O., is understood to have bought a tonnage of heavy melting steel at close to $11 for No. 1, which is slightly under the general market level.

Chicago—The scrap market continues strong but current activity is insufficient to furnish adequate support and steelmaking grades have declined 25 cents a ton. Steel mills believe that higher prices for scrap may develop this fall when the lift in steelmaking takes place, but few are willing to make commitments now. The top of the market for No. 1 steel is $9.50 a ton and it is believed that the next few sales will be at about $9.25. The current weakness was precipitated by the decline in steel making operations and prospects for little increase over the next two or three weeks. Railroad scrap on which bids closed last week brought slightly less than $10 a ton against somewhat above this figure earlier. An independent steelmaker has just closed for 10,000 tons of heavy melting steel at $9.25, delivered.

Pittsburgh—Except in machine shop turnings, where there is a scarcity and where present prices preclude Detroit material from moving into this district, open-hearth and blast furnace scrap are decidedly dull. Machine shop turnings are strong at $8 to $8.50 but little test is evident in a nominal $11.75 to $12.25 for No. 1 heavy melting steel. Specialties, since a $13.75 purchase by a district steel foundry a few weeks ago, have reverted to dullness. Probably a leading reason for relative price stability is absence of distress material.

Detroit—Iron and steel scrap prices continue unchanged, with the

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accent on the weak side, but no sales warranted an adjustment. The volume of scrap coming out from automotive manufacturers is declining slowly. Over the next 30 days an extremely quiet market with practically no changes in prices is expected by most dealers.

Buffalo—Scrap continues inactive. Some tentative offers around $9.50 are reported for No. 1 heavy melting steel but are attracting no interest. Other prices continue to sag slightly as there is no outlet in this market. Diversion of scrap from down state points for export overseas and to Canada is a strengthening factor. A steelmaker here recently bought over 2000 tons of a specially selected No. 2 heavy melting steel at $8.75.

Philadelphia—Profound dullness, with prospects for little improvement this month, has resulted in reductions in some grades of scrap here. Certain of the major grades, such as melting steel, heavy breakable cast and No. 1 cupola cast, are unchanged. Some of current reductions are largely nominal, based more upon offerings than actual sales. While the tendency is toward easiness, the market is fairly steady considering the present low rate of consumption. There is no suggestion of the demoralized conditions that have prevailed at times since the depression set in.

New York—Domestic demand for steel and iron scrap is light and mostly in small lots, with export buying still dominating the market. Prices are nominally unchanged.

Toronto, Ont.—Trading in iron and steel scrap, while under the average for several weeks, shows improvement in some lines. The Hamilton mills are taking supplies of heavy melting steel and turnings in small lots. Iron grades are moving slowly, with demand spotty.

Birmingham, Ala.—Steel and iron scrap continues in small demand and consumers are not interested, in view of restricted steel production. Prices are weak but unchanged.

St. Louis—Two mills entered the market for steel and iron scrap last week, an East Side consumer taking 7000 to 8000 tons of specialties, including wheels, couplers and rails, for the next three months. Another purchase of 2000 to 3000 tons is for delivery at Federal, Ill., during August and September. These purchases are said to have been at the quoted market.

Cincinnati — Dullness in the iron and steel scrap market is being broken only by sales of miscellaneous lots and reduced deliveries against contracts on which little tonnage remains to be moved. Dealer activity is reduced to a minimum. Prices are nominally unchanged.

Metallurgical Coke

Coke Prices, Page 57

Conditions in the coke market are dull and seasonal quiet continues. At Pittsburgh metallurgical coke is being specified slowly and shipments are light. Beehive coke, on a Connellsville oven basis, is steady at $3.60 for contracts and $3.85 for prompt shipment. Connellsville foundry coke is steady at $4.60, ovens, for common grades.

Foundry coke shipments are holding up well at Chicago and July led June by a small margin, with August prospects equally good. Stove and radiator foundries are showing an increased melt. Prices are unchanged at $8.50, ovens, for outside delivery

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and $9.25, delivered at Chicago.

Cincinnati cokemakers found July shipments of by-product foundry coke about 25 per cent less in July than in June. Domestic coke has been increased 25 cents per ton, to $5.75 per ton, delivered, Cincinnati. Birmingham independent coke producers have not cut down production, though steel companies are firing fewer ovens to match lessened consumption.

Warehouse

Warehouse Prices, Page 60

Pittsburgh—No. 24 gage hot-rolled annealed sheets out of warehouse here are now quoted 3.30c for over 25 bundles and 3.55c for one to 24 bundles, a reduction of 5 cents per 100 pounds. Steel warehouse shipments here in July were 10 to 50 per cent under the volume of June.

Chicago—Volume of steel moving from warehouses is slightly smaller and continued decline is in prospect, with a moderate pickup expected in September. The lighter lines are moving at the most active rate with sheets and bars leading.

Detroit—Warehouse business in iron and steel has opened August with the expectation of a slight upturn. The recession in July was no more than what was expected.

Philadelphia—Warehouse trading has declined here over the past two weeks, giving way to dull seasonal influences. As expected, the July rate was under that of the preceding month, and some question prevails as to whether August will show any gain over July. Prices are steady.

Baltimore—Following the recent reduction at the mills, the warehouse market here has dropped $1 a ton on black sheets, now holding at 3.51c per pound on lots of 50 to 249 bundles.

Cincinnati—Demand for warehouse materials shows a seasonal decline, but is above the 1933 level. Prices are unchanged, except a reduction on No. 24 hot-rolled sheets from 4.05c to 4.00c.

New York—Buying of steel from store continues light, with prices unchanged, including black sheets.

Boston—Warehouses have reduced galvanized toncan sheets 20 cents to 5.40c. No change has been made in black sheets but such action is considered likely soon. Buying is light.

Coke By-Products

Coke By-Product Prices, Page 57

New York—Distillate prices are firm with fair demand. Other by-

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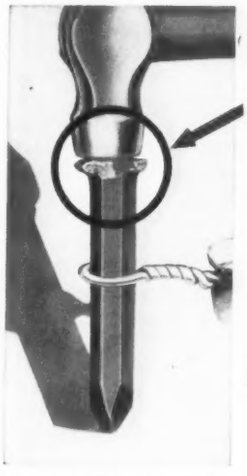

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products are less active. The long-expected announcement of prices for sulphate of ammonia probably will be made Monday.

Nonferrous Metals

Nonferrous Metal Prices, Page 58, 59

New York—Midsummer industrial dullness was reflected with full force in the domestic nonferrous metal market last week. Business has been very light but prices generally have held steady.

Copper—Consumers made only routine purchases with domestic blue eagle sales ranging from less than 100 tons to slightly over that volume each day. No immediate pickup in buying is expected. Price levels held on the basis of 9.00c, Connecticut, for blue eagle. The working rules committee of the code authority is working on the problem of sales allocation against stocks and a report is expected on Aug. 9. Easiness developed in the export market and political developments in Europe are being watched closely.

Lead—Sales slumped to small carlots during the past week. Most sellers in the St. Louis market quoted 3.60c during the week while in New York the price slipped on Thursday to 3.75c.

Zinc—Prime western zinc prices held at 4.30c, East St. Louis, although competitive business has been extremely light. Due to a favorable statistical position of the industry, sellers have been reluctant to press metal on an unwilling market. A revised and final draft of a code of fair practices was submitted to Washington and approval is expected soon.

Tin—Straits tin prices were steady during the first part of the week but slipped under the 52-cent level on Wednesday when London exchange quotations broke on withdrawal of support by powerful foreign interests. Sales were light with tin plate operations falling off from their recent 50 per cent pace.

Antimony—A firmer undertone around midweek was shown on slightly improved buying interest but prices for spot held generally unchanged at 2.12½c, duty paid.

Aluminum—Held unchanged in seasonally slow markets.

Quicksilver

New York—Quicksilver is unchanged although slightly better buying has been reported in some quarters. Small lots are quoted at $75.50 a virgin flask of 76 pounds and round lots $74.50 a flask.

Ferroalloys

Ferroalloy Prices, Page 58

Shipments against quarterly contracts on ferromanganese and spiegeleisen in the Pittsburgh district continue slack owing to the pronounced decline recently in open-hearth melting rates. However, prices on ferroalloys are unchanged, with ferromanganese delivering in Pittsburgh for $89.79, figured on a Baltimore base of $85, and spiegeleisen at $26 per ton for small spot shipments.

Ferromanganese sellers at New York report continued light specifications and, with prospects for restricted steel production, look for little gain this month. Ferromanganese is $85, duty paid, Atlantic and Gulf ports. Domestic spiegeleisen, 19 to 21 per cent, is moving slowly at $26, furnnace, on lots up to 50 tons; at $24 on 50 tons and over.

Iron Ore

Iron Ore Prices, Page 58

Shipments of iron ore from upper lake ports in July totaled 4,432,140 tons, or 1,002,457 tons more than in July, 1933. Superior supplied 28.87 per cent of the total, or 1,279,367 tons, while Duluth was a close second with 1,262,460 tons, or 28.48 per cent.

For the season to Aug. 1, shipments from upper lake ports have totaled 11,523,525 tons or slightly more than double the 5,828,829 tons dispatched in the comparable period of last year.

Fluorspar

Fluorspar Prices, Page 58

New York—Contrary to the recent trend in prices on domestic fluorspar, the market on imported material has advanced 50 cents a net ton to $19.50, duty paid, tidewater. Unless there is an especially sharp drop in domestic material, it is pointed out, foreign fluorspar is not necessarily affected as the latter's market in this country is pretty much confined to the seaboard. With the American dollar depreciated as it is, costs of importations here trend higher.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 57

Bolt, nut and rivet buying is light, with small prospect of an increase during third quarter. Pittsburgh producers are receiving some orders from jobbers, uniformly small. Agricultural implement makers are out of the market. Railroads and miscellaneous users are buying little.

At Chicago only small lots are moving and railroads and carbuilders are taking less than recently. Some

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railroad repair shops are being closed as work is finished.

Bolts and nuts continue to be quoted at 70 off list, and large rivets 2.90c, Pittsburgh, and 3.00c, Chicago.

Cold Finished

Cold Finished Prices, Page 57

Pittsburgh—Orders and shipments of cold-finished steel bars in July generally declined to a low point for the year. In most cases cold-finished steel bar buyers bought as sparingly as in January, previous low. The market is steady at 2.10c base, Pittsburgh, for carbon cold-finished steel bars, with alloy cold-drawn remaining at 2.95c, Pittsburgh.

Pacific Coast

Pacific Coast Prices, Page 57, 59, 60

San Francisco—*(By Air Mail)*—Although awards of plates, shapes, reinforcing bars and cast iron pipe were by no means heavy during the past week, a number of new projects came out for figures, including 1600 tons of reinforcing bars and structural shapes for a wharf and transit shed at Stockton, Calif.

The leading development was opening of bids on the Parker dam project in Nevada, involving over 3200 tons of bars, shapes and plates. Six Companies Inc. of Delaware, Boulder City, Nev., was low bidder on the general contract at $4,239,834. The government will furnish the steel, the general contractor to install only.

Pacific Coast Steel Corp. took 150 tons of reinforcing bars for the Brannan street sewer, San Francisco. Unnamed interests secured 139 tons for a storm drain in San Bernardino county, California, for the state. Pending business exceeds 29,000 tons.

Consolidated Steel Corp., Los Angeles, booked 900 tons of plates for the Sunset pipe line, Hetch Hetchy project, San Francisco. Jones & Laughlin Steel Corp. took 175 tons for the twelfth naval district, San Francisco. Unnamed interests secured 150 tons for 28-inch dredge pipe for the Fort Peck dam in Montana. Bids have been taken on 125 tons for a pipe line at La Mesa, Calif., and on 100 tons for a 300,000-gallon tank for Los Angeles.

Consolidated Steel Corp. secured 210 tons of structural steel for a bridge at Delmar, Calif. Unnamed interests took 100 tons for a bridge in Catron county, New Mexico. Bids have been taken on 106 tons and on 157 tons of reinforcing bars for a bridge in Kern county, California, for the state. Pending business now calls for more than 33,700 tons.

Bids have been opened on 594 tons of cast iron pipe for Gilroy, Calif., and new bids will be opened Aug. 8 for 428 tons for Fallon, Nev.

Strike End Spurs Demand

Seattle—Resumption of water service, following the strike settlement, and release of additional funds for public works have given an impetus. Several large iron and steel contracts are pending, with particular reference to the Coulee and Bonneville projects.

Oregon highway commission has ordered contractors to proceed with construction of the five steel bridges along the coast. Contracts have been awarded for more than two months but delay was caused by negotiations between state and government for the $5,000,000 loan. Now $1,000,000 is on hand.

Subcontract for building four 75-foot cableway hoist towers for the Bonneville project has been awarded the Washington Iron Works, Seattle, by the joint general contractors, General Construction Co., Seattle, and J. F. Shea, Portland, Oreg. The job includes two 20-ton hoists with movable towers, cableway engines and carriages and involves 300 tons of steel. Additional awards for the 12,128 tons of structural steel for the powerhouse substructure, intake and other work in the general contract are pending.

Isaacson Iron Works, Seattle, is building a gold dredge, bucket type, for the Bucyrus-Erie Co., Milwaukee, for shipment to Nome, Alaska. This machine involves 200 tons of shapes and 125 tons are being used in a barking machine, being built by the same plant for the Washington Pulp & Paper Co., Port Angeles, Wash.

Pioneer Construction Co., Seattle, has awarded 175 tons of shapes for the Ediz Hook coast guard hangar to Isaacson Iron Works, Seattle. A small tonnage of reinforcing bars for the same project was booked by the Pacific Coast Steel Corp., Seattle.

Jobbers report small sales out of stock, corrugated sheets and bars being in best demand. There is no mill buying. Stocks are badly depleted because of the strike.

Cast iron pipe demand is slow.

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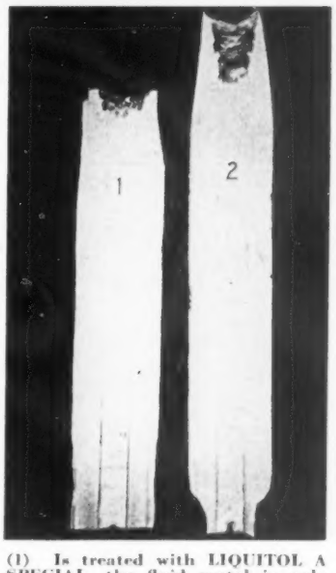

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Bremerton, Wash., has not yet made award of 200 tons of 6, 8 and 12-inch mains, bids for which were opened recently. Brewster, Wash., has awarded a contract for an unstated tonnage of pipe to the Spokane Tank & Culvert Co., Spokane.

Scrap shipments are again moving to Japan but in limited tonnages. Exporters are shipping larger quantities through Vancouver, B. C. Increased interest in this market is expected as soon as steamship schedules are restored.

Steel in Europe

Foreign Steel Prices, Page 60

London—*(By Cable)*—The holiday period in Great Britain causes steel and iron markets to be quiet, but most works are well booked with contracts and expectations for autumn activity are good. Sheets show least movement. Some Continental steel is appearing at lower than British prices, including duty. Export trade is slightly better, but prices are low.

The Continent reports usual summer quiet, but some trade is being done with the Near East. South Africa, Argentine and Russia. Berlin reports the domestic market is moving well.

Equipment

Chicago—New equipment business is negligible with no outstanding inquiries before the trade. The little miscellaneous business pending includes a grinder for the Santa Fe railroad. Some of the tools for Lane Technical high school remain to be placed, bids on which were opened Tuesday. Included are grinders, milling machines and wood-working machines. A South Bend builder has been awarded lathes and drills on an earlier opening. The industrial inquiry from an Aurora, Ill., firm, previously noted, has been filled. This company bought both rebuilt and new machinery. Little activity is noted in small tools.

New York—Buying and inquiry for machinery is light, most purchases being confined to one or two tools for immediate needs.

Cleveland—National Acme Co. here reported net profit of over $90,000 for the second quarter, compared with loss of $108,000 in the same quarter last year. Backlog in machine tools orders for this interest will carry well into the fall, it is reported. Winton Engine Co. will build the diesel power plants, 660-horsepower each, for the two new Burlington streamline trains. Timken Roller Bearing Co., Canton, O., is reported to have received orders for bearings and boxes to be used on four railcars for South America.

Pittsburgh—Carnegie Steel Co. has not yet definitely awarded contracts for the building of a 42-inch wide strip mill at its McDonald works, Youngstown, O., although construction plans are nearing a point where developments will occur momentarily. Steel mill equipment interests are fairly busy with pending mill installations, prominent among which being built in this district are rolling mills for Ford Motor Co., Youngstown Sheet & Tube Co., and McClouth Steel Corp. Demand for rolls and ingot molds has been decidedly slack recently. Numerous cases are reported of finished molds and rolls having been ordered but shipments held up.

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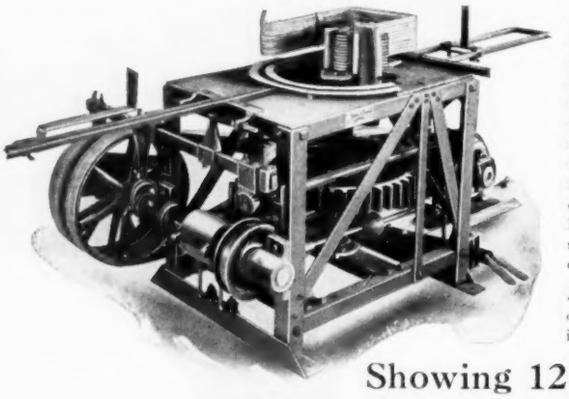

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Construction and Enterprise

New York

BATAVIA, N. Y.—A special election will be held in August on financing a 1,500,000-gallon steel water tank, to cost about $100,000.

BROOKLYN, N. Y.—L. E. Berley Inc. has been formed by Samuel M. Berley, 274 Madison avenue, New York, to manufacture boilers and accessories.

ELMIRA, N. Y.—Bids will be opened Aug. 10 at Philadelphia for elimination of Pennsylvania railroad crossings in this city. The work includes several crossings and will require considerable steel.

JAMESTOWN, N. Y.—Jamestown & Northwestern Railway Co. has asked permission of the interstate commerce commission to abandon its 33 miles of trolley system from Jamestown to Westfield, N. Y.

KINDERHOOK, N. Y.—Hendrik Hudson Distillery Co., 22 East Fortieth street, New York, will build a new plant at Kinderhook, including machine shop and powerhouse, to cost about $100,000.

PORT RICHMOND, S. I., N. Y.—Mariner's Harbor Basin & Repair Corp. has been formed by Robert A. Forsyth, 251 East Fourth street, Brooklyn, N. Y., to operate a shipbuilding and repair plant here.

New England

CAMBRIDGE, MASS. — Cambridge Auto Forge Inc. has been formed by Fred J. Steeves, 156 Wells avenue, Dorchester, Mass., to manufacture automotive accessories and parts.

MALDEN, MASS.—Tilson Mfg. Co. Inc. has been formed by M. P. King, 255 Medford street, to manufacture metal products.

New Jersey

CHESTER, N. J.—Borough will take bids late in August for a waterworks plant and system, to cost about $56,000. G. W. Knight, 38 Park street, Newark, N. J., is engineer.

NEWARK, N. J.—Gus Reinke Machinery & Tool Works has been formed by Gus Reinke, care Samuel Ribner, 790 Broad street, to manufacture machinery, parts and tools.

Pennsylvania

PITTSBURGH—Bids will be received by city controller, City-County building, until Aug. 20 for construction of an incinerator plant adjacent to Brilliant pumping station and for an incinerator in the Twenty-first ward, with equipment.

ROCKWOOD, PA.—Associated Gas & Electric Co., 61 Broadway, N. Y., plans rebuilding its powerplant at Rockwood, after fire destruction, at cost of about $250,000.

Ohio

CLEVELAND — Curtis Key Cutter Inc. has been incorporated with 200 shares no par value to manufacture keymaking devices, by Manuel Koslen and associates, 510 Leader building, Cleveland.

CLEVELAND—Metal Finishers Inc., recently incorporated to do process production plating, has leased a building at 1725-29 East Twenty-seventh street for use as a plant. A. J. Fenzell is president, Glenn Friedt, vice president, and L. L. Adelsperger, secretary and treasurer.

COLUMBUS, O.—National Armature & Electrical Works, Bluefield, W. Va., large manufacturer of stator and armature coils, is to move its plant to Columbus, O., it is announced by Clare E. Cook, director of the industrial bureau of the chamber of commerce.

DEFIANCE, O.—Federal loan of $93,000 has been made to this city for steel storage tanks, watermains and office building.

FLETCHER, O.—Federal loan of $28,000 has been approved, for construction of a waterworks system.

IRONTON, O. — Superior Cement Corp., Portsmouth, O., plans to build a belt conveyor and temporary dumping chute near the foot of McGoveny street at Ironton, O.

MANSFIELD, O.—City plans rebuilding its sewage disposal plant at cost of about $25,000. James F. Carrigan is service director.

WAPAKONETA, O.—PWA loan of $146,000 has been approved for construction of an electric light and power plant.

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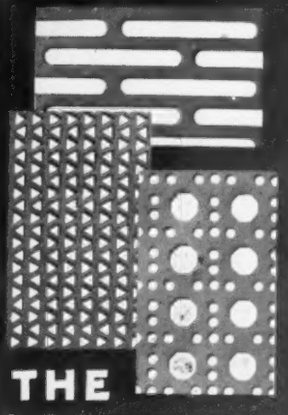

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WILLARD, O.—Village has received authorization of a PWA loan of $187,000 for sewage disposal plant and sewer system.

Michigan

ANN ARBOR, MICH.—Board of public works has approved construction of an activated sludge sewage disposal plant, work to be started at once.

BAY CITY, MICH.—Thiesen-Clemens Co., St. Joseph, Mich., plans an oil terminal, including two 37,500 and one 55,000-gallon steel tanks, pumps and pumphouse, to cost about $75,000. W. J. Shortell, St. Joseph, Mich., is engineer.

DETROIT—Detroit Creamery Co. is having a power plant erected at Twenty-third and Linden streets by the Krieghoff Co., 6661 French street.

DEEROIT—Superior Tool Works, 6633 Bohns street, Detroit, is taking bids for an addition to its plant. Pollmar, Ropes & Lundy, 2539 Woodward avenue, are architects.

DETROIT—Linde Air Products Co., New York, has let contract to the Austin Co., 11-205 General Motors building, Detroit, for a plant at 7501 St. Aubin avenue, Detroit.

DETROIT—Leader Tool & Die Co., 4196 Bellevue avenue, has been incorporated with $1000 capital to conduct a general machinery business, by Adam Ozak, 5209 Helen avenue, Detroit.

ECORSE, MICH.—Ecorse Foundry Co. has been incorporated with 50,000 shares no par value to conduct a general foundry business, by John M. Grinnian, 1700 Fisher building, Detroit.

HOLLAND, MICH.—Holland Celery Planter Co., Louis Poll manager, has started construction of a plant 60 x 108 feet.

ROYAL OAK, MICH.—Chaso Tool Co. Inc., 725 Fourth street, has been incorporated with $25,000 capital to manufacture thread chasers, by R. L. Akers, 603 East First street, Royal Oak., Mich.

Illinois

CHICAGO—Ariston Resistor Corp., 4045 Diversey avenue, has been incorporated with 500 shares common stock, to manufacture resistors, radio accessories and radios, by Westergaard & Associates, correspondents, 160 North La Salle street.

CHICAGO—Municipal Refuse Disposal Corp., 203 South Dearborn street, has been incorporated with 100 shares no par value to manufacture machinery and appliances for municipal garbage disposal, by Julian C. Ryer, correspondent, 29 South LaSalle street.

CHICAGO—Youth-O-Lator Laboratories Inc., suite 401, One South LaSalle street, has been incorporated with 500 shares no par value common to manufacture electrical devices, by Taylor, Miller, Bush & Boyden, correspondents, Continental Illinois Bank building, 231 South LaSalle street.

FOREST, ILL.—Bids will be asked some time in October or November on a 50,000-gallon tank on 100-foot tower and other waterworks improvements under a $32,000 PWA grant and loan. Warren & VanPraag Inc., 415 Milliken building, Decatur, Ill., is engineer.

GREENFIELD, ILL.—Bids will be asked about October for a waterworks and distribution system to cost about $66,000, for which PWA loan has been approved. Warren & VanPraag Inc., 415 Milliken building, Decatur, Ill., is engineer.

JOLIET, ILL.—Webb & Gray Coal Co. plans construction of coal pockets and yards, including elevating and conveying equipment, to cost about $40,000.

PEORIA, ILL.—Sheet Metal Products Co., 320 South Commercial street, has been incorporated by Edward H. Olsen and Bruse H. Miller, to manufacture sheet metal products.

District of Columbia

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids Aug. 14, schedule 3059, for a tractor with crane attachment for delivery to Sewall's Point, Va.

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids Aug. 21 for turbine-driven forced draft blowers, schedule 3041; Aug. 14, motor-driven centrifugal pumps and spare parts, schedule 3044.

WASHINGTON—David Lynn, architect of capitol, Washington, will receive bids until Aug. 8 for replacement of copper roofing on senate office building, Washington. Drawings and specifications may be obtained from Mr. Lynn.

WASHINGTON—Department of interior has let contract to Bahen & Wright, 916 Rhode Island avenue, Washington, for construction of a heat, light and power plant at Howard university, 1-story, brick. A. I. Cassell, Howard university, 2401 Sixth street Northwest, is architect.

Georgia

QUITMAN, GA.—C. O. Hersham, Walton building, Atlanta, Ga., process engineer in charge of projected sweet potato starch plant, has ordered materials and will start erection of plant about Sept. 1 to have it in operation by November. Plant capacity will be 24 tons of starch in 24 hours. Investment is estimated a $268,000. Chain of 10 plants is planned for southern sweet potato belt.

Kentucky

LEXINGTON, KY.—Schenley Distillers Corp., 20 West Fortieth street, New York, will rebuild its burned plant at Lexington. Bids are being received by Carl J. Kiefer, consulting engineer, Cincinnati.

PARIS, KY.—City, Boone Baldwin, mayor, is adding to its electric light and power plant and will install diesel engine and generator of 736-kilowatt capacity, doubling its capacity.

Louisiana

SHREVEPORT, LA.—City, George W. Clardy Jr., mayor, will receive bids Aug. 15 for an incinerator to cost about $150,000. Clarence C. Olschner, Shreveport, La., is architect.

Maryland

HAGERSTOWN, MD.—Potomac Edison Co., Hagerstown, Md., has acquired the Potomac Valley Corp., Harpers Ferry, Va., and the Maryland Light & Power Co. and property, Strasburg, Va.

North Carolina

FAISON, N. C.—Town plans construction of waterworks and PWA loan of $47,000 has been approved. W. E. Freeman, High Point, N. C., is engineer.

South Carolina

GREENWOOD, S. C.—Dan T. Duncan, engineer, will probably call for bids in September for power plant on Buzzard roost, including clearing 12,000

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Timken Roller Bearing Co., The, Canton, O.

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S K F Industries, Inc., Front St. & Erie Ave., Philadelphia, Pa.
Timken Roller Bearing Co., The, Canton, O.

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Timken Steel & Tube Co., Canton, O.
Washburn Wire Co., Phillipsdale, R. I.

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acres for lake, powerhouse 50 x 100 feet, three hydraulic turbines of 7500 horsepower each, four spillway gates, 25 feet high and 28 feet wide. Appropriation of $2,767,000 has been approved.

Tennessee

JOHNSON CITY, TENN.—Railroad shops of East Tennessee & Western North Carolina railroad have suffered $10,000 loss by fire.

KNOXVILLE, TENN. — Tennessee Valley Authority, L. N. Allen, administrator, clearance division, Knoxville, Tenn., desires names of firms manufacturing woodworking machinery and sellers of used machinery for use in shops employing one to three men, including lathes, planers, jointers and mortisers, shapers, bandsaws and small combination woodworking machines.

NASHVILLE, TENN.—Nashville district United States engineers, Maj. C. E. Perry, Nashville, Tenn., in charge, have started designs for Pickwick dam on Tennessee river, about 20 miles south of Savanna, Tenn. Lock design under supervision of Nashville office, dam and powerhouse to be designed elswhere. Fourth floor of Bennie-Dillon Building, Nashville, leased for office space, S. A. Weakley, general supervisor.

West Virginia

KERMIT, W. VA.—Town, W. H. Stepp, mayor, will receive bids Aug. 9 for a sewage disposal plant.

Virginia

DANVILLE, VA.—City, E. C. Brauntley, manager of utilities, has filed application with PWA for $3,000,000 loan for development of a power project.

Missouri

ADRIAN, MO.—Approval of a PWA loan has been obtained for construction of a waterworks plant. Plans and specifications will be ready for taking bids soon. E. T. Archer & Co., New England building, Kansas City, Mo., are engineers.

BLAND, MO.—City plans construction of a waterworks system and sewers to cost about $25,000. PWA loan is approved. G. E. Wells Inc., Security building, St. Louis, is engineer.

BOLIVAR, MO.—PWA has approved water and sewer projects and plans will be ready for bids in a few days. E. T. Archer & Co., New England building, Kansas City, Mo., are consulting engineers.

LANCASTER, MO.—Plans for waterworks plant and distribution system have been approved by PWA and will be ready for bids soon. E. T. Archer & Co., New England building, Kansas City, Mo., are consulting engineers.

Texas

ATHENS, TEX.—City will vote Aug. 14 on $64,000 revenue bonds to be used with PWA grant of $25,000 for a new sewage disposal plant, two sewage lift stations, a 200,000-gallon elevated steel tank, three pumps, flow meter and watermain extensions. Willard S. Conrad, Esperson building, Houston, Tex. is engineer.

CUERO, TEX.—Cuero Machinery & Hardware Co. has been incorporated with $25,200 capital to deal in machinery, by J. W. Herring and associates.

SWEETWATER, TEX.—City, S. H. Bothwell, city manager, will vote Aug. 28 on an issue of $160,000 in bonds for PWA loan for a waterworks system. Hawley, Freese & Nichols, engineers, Capps building, Fort Worth, Tex. (Noted July 23.)

TERRELL,, TEX.—L. A. Markham, mayor, plans construction of a sewage disposal plant, PWA loan for $299,000 being approved. Powell & Powell, Republic bank building, Dallas, Tex., are engineers.

WELLS, TEX.—City, J. H. Dubose, mayor, plans waterworks improvements, including elevated tank and fire hydrants, and has obtained allotment of $20,000 from PWA. J. Rady, 400 Majestic building, Fort Worth, Tex., is engineer.

Wisconsin

BARTON, WIS.—City, J. Willkom clerk, is having plans prepared for a sewage disposal plant and equipment, to cost $30,000. J. Donahue Co., Sheboygan, Wis., is engineer.

BURLINGTON, WIS.,—City is having plans made for a sewage disposal plant. R. Cramer & Sons, Milwaukee, are engineers.

MADISON, WIS.—Department of agriculture, forest service, forest products laboratory, will receive bids until Aug. 13 for an experimental pulpwood grinder with hydraulic and other auxiliary equipment: until Aug. 10 for four seasoning chambers and a wind tunnel and an elevator for a 30-foot high testing machine.

MANITOWOC, WIS. — Hoffman Foundry Co., formed by Edward Hoffman, has leased the plant of the Richards Iron Works, Ninth and Commercial streets, and will conduct a general foundry business.

MARION, WIS.—City will take bids soon for a waterworks system to cost about $75,000, for which PWA has allotted $62,000. A. E. McMahon Co., Menasha, Wis., is engineer.

PRESCOTT, WIS.—William Murray, city clerk, will receive bids until Aug. 7 for a power pump and other pumping equipment for the municipal waterworks plant. Druar & Milinowski, 830 Globe building, St. Paul, are engineers.

Minnesota

DULUTH—M. A. Hanna Coal & Dock Co., Connors Point, Superior, Wis., will rebuild its dock at Thirty-seventh avenue West and Bayfront, at cost of about $25,000.

HOPKINS, MINN.—Wood Products Co., Ninth avenue South and Excelsior boulevard, plans to rebuild its burned woodworking plant.

MINNEAPOLIS—Hiawatha Brewing Co., Helmar Knudsen, president, Thirty-first street and Hiawatha avenue, will issue $200,000 common stock, using proceeds for remodeling its plant and buying machinery and equipment. A new bottling house will also be erected. Brewery will have capacity of 60,000 barrels of beer annually.

PINE CITY, MINN.—Eastern Minnesota Power Co. will make alterations to its steam plant and replace its transmission and rural electric lines; also will make alterations and repairs to its diesel power plant and build short line extensions at Milaca, Minn.

RED WING, MINN.—Pure Ice & Fuel Co., Reed Mohn, manager, plans to erect two 15,000-gallon steel tanks and a steel storage house on West Main street.

North Dakota

MANDAN, N. DAK.—Occident Elevator Co. plans to rebuild its elevator which was burned July 21, with loss of about $15,000.

Iowa

IOWA CITY, IOWA—PWA has allotted funds for a municipal electric light and power plant to cost about $917,000. Walter E. Schwob, Iowa City, Iowa, is consulting engineer.

SHEFFIELD, IOWA—M. E. Kraft and J. J. Wheaton have formed the Sheffield Machine Co. and have established a machine shop for general work.

WATERLOO, IOWA—Isaiah Crabb has repurchased the Crabb Gas Engine Co. building and machinery from W. G. McMillen who bought it from him two years ago and has been operating it since.

Kansas

MOUND VALLEY, KANS. — City plans construction of a waterworks plant to cost about $75,000, for which PWA loan has been approved.

Montana

MISSOULA, MONT.—Northern Pacific railroad, Railroad building, St. Paul, has awarded contract for construction of an addition to its roundhouse at cost of about $25,000. O. M. Rognan, 1228 Railroad building, St. Paul, is engineer.

MISSOULA, MONT.—Montana state highway commission, R. D. Rader, state highway engineer, has awarded contracts for construction of a 2-story highway maintenance shop, 60 x 120 feet, to cost about $50,000.

Pacific Coast

REDDING, CALIF. — City defeated $260,000 bond issue for purchase of privately-owned waterworks system and will proceed to build a municipal system.

PORTLAND, OREG.—City council has taken preliminary steps toward a proposed $8,000,000 sewage disposal project of which $2,000,000 is to be furnished by the federal government.

CASHMERE, WASH.—City council is investigating types and cost of incinerators, intending to install if funds are available.

CENTRALIA, WASH.—Monarch Coal Mining Co., 114 North Pearl street, has been incorporated with $20,000 capital by Jay Agnew, Fred Radke and George L. Sheatley.

Dominion of Canada

EDMONTON, ALTA.—Cadonian Coal Co. plans an air-cleaning plant at its mines, to cost about $55,000.

FT. ERIE, ONT.—Canadian Gasket Co. Ltd., E. B. Reynolds manager, plans establishment of a plant for the manufacture of gaskets, washers, valves and fittings, to cost $50,000.

WINDSOR, ONT.—Industrial Screens & Machines Ltd. is having plans made by G. T. Masson, architect, Windsor, Ont., for a plant to cost about $40,000.